Edna Snelson K6RCM
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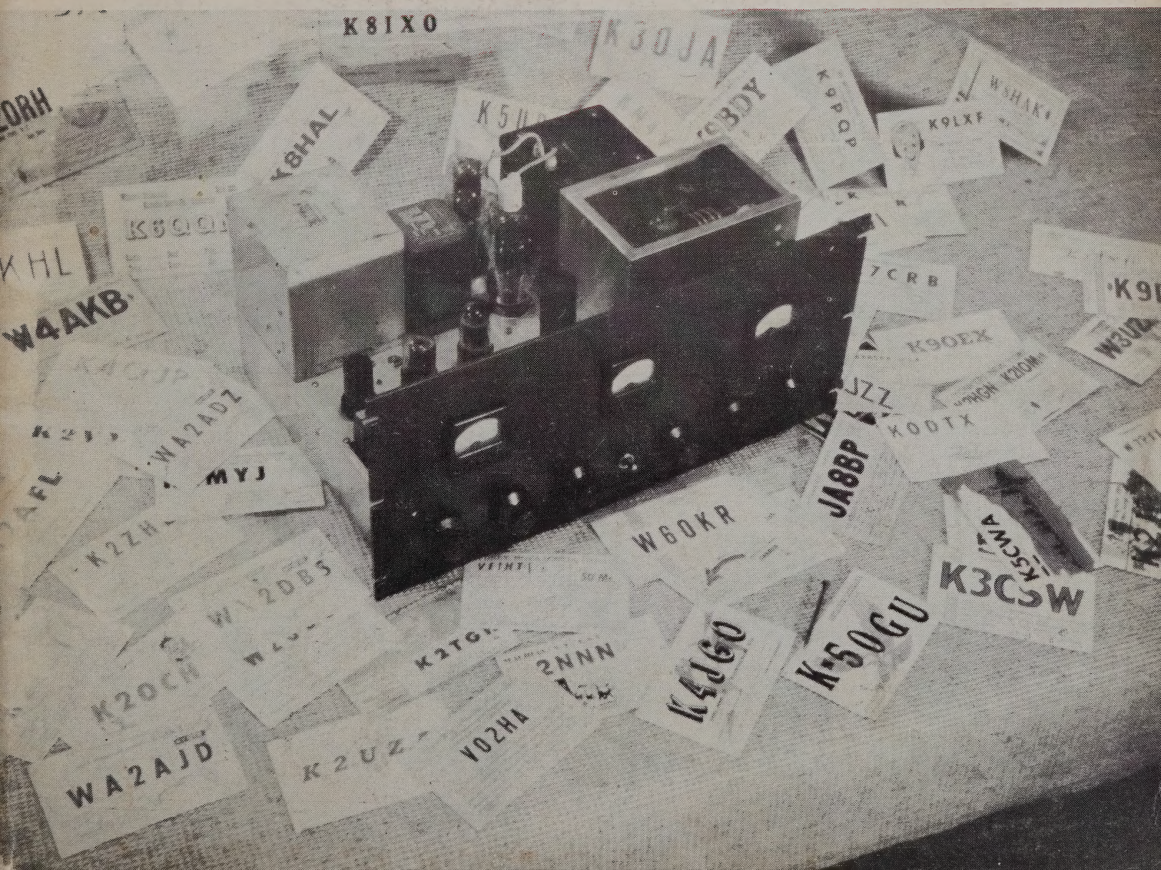
Western RADIO Amateur

August 31, 1959
25c

250 Watts on 50 Megacycles



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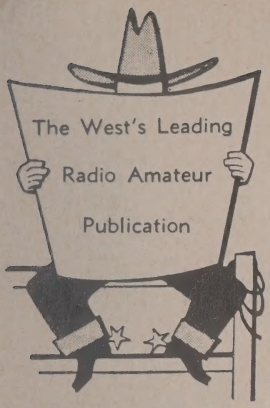

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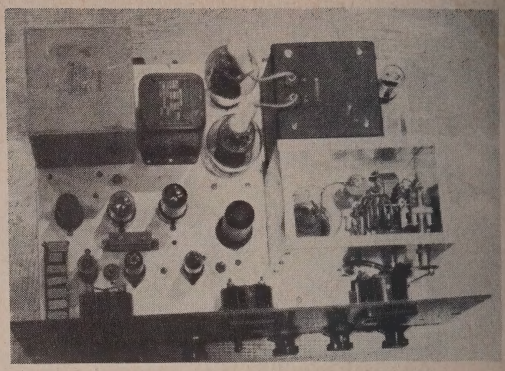
This month's front cover

The rig, top view, from left to right, rear first; filament transformer, audio driver transformer, 811's, modulation transformer, and 6AX4 clipper. Front row driver stages and multipliers, and on right front, the final compartement with copper screen top removed.



250 Watts on 50 Mc.

George Willis W6OKR
10 Pack Way
Larkspur, California

A decade ago the 6 meter band was considered sort of a no mans land and activity was limited to a few hearty souls who believed that it eventually would take its place among the other popular ham bands. In those days a super regen receiver and modulated oscillator would put you in business on six.

However, with the advent of the Technician class license and their subsequent use of the six meter band, conditions have changed. The modulated oscillator and super regen have long since been discarded and sharp double conversion receivers and crystal controlled transmitters are the rule now and there are no exceeptions.

Many advanced and general class amateurs have joined with the technician to make the band a wonder to behold. At times you get the impression you are listening to the ten meter band, and of course there are times when you wonder if your receiver has stopped working—when the band goes dead, such as with ten meters.

For the new ham on six or the one who would like to do a little more than local ragchewing, there are a number of problems to overcome before some of the new and exciting horizons can be opened. The antenna problem is easily solved by building your own or buying one of the many mass produced beams. Converters which dig down into the noise for the weak ones are relatively easy to build for those who prefer to roll their own, and commercially available converters do a good job too.

But higher powered transmitters do pose a problem.

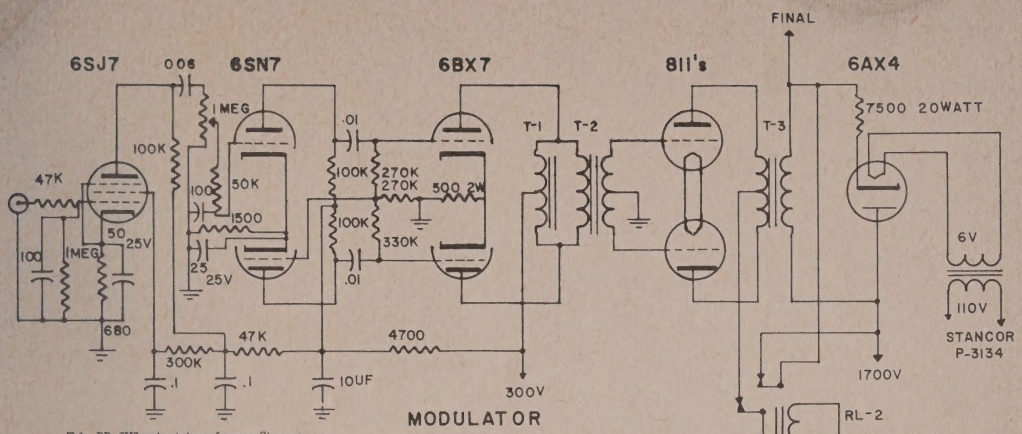
My purpose herein is to describe a 250 watt AM transmitter using a 4E27 in the final. I have found that this amount of power working into a well matched beam at a good height will bounce the E layer around a bit at times! Let's hope it will do the same for you should you duplicate the rig.

4E27

I would like to claim that the choice of the 4E27 came about after much thought and study, but to be truthful, the first 4E27 arrived in my shack in the form of a gift. One thing I must emphasize however, I'm speaking of the 4E27, not the 4E27A. There is a difference, so let's confine ourselves to the 4E27. The 4E27 has a few characteristics worthy of notice. Probably the most important of these is its low drive requirement. Hence fewer harmonic problems that need to be corrected by filtering to prevent clobbering your neighbors television sets.

Modulation

In the modulation department, high level is a must. Various forms of efficiency type modulation were considered when the rig was first designed, but a number of factors entered into the final conclusion. There is absolutely no



T-1 PP 6V6 output transformer Stancor A-3849
T-2 TCS Modulation transformer or Thordarson 20D78
T-3 Bendix A-103000 (Surplus) or Thordarson 21M62A.

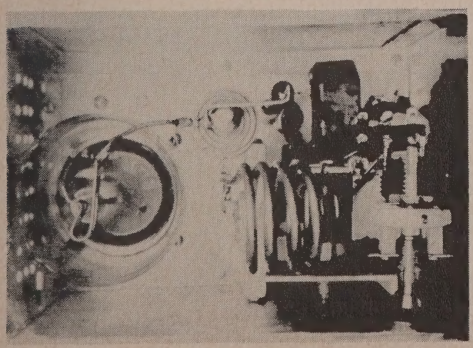
question that some forms of screen modulation will get through as well as plate modulation, however when one considers just what he is doing to adjacent channels on the ham bands with his distortion products, well, I'm for high level AM. While we are designing, let's not forget our old friend the negative peak clipper on the secondary of the modulation transformer. There is certainly no sense in generating a clean signal and messing it up with negative side overmodulation products.

In the modulator the old standbys, 811's, supply sufficient audio to fully modulate the carrier with a minimum of distortion. A pair of 807's or 6146's would probably modulate the carrier very close to 100 percent, however you would be pushing them too much to suit me. Also with class B triodes you don't have to worry about screen grid power supply modulation. There are enough signals on the bands these days occupying more than their share of space, so let's keep the audio clean and the carrier narrow and easy to understand at the receiving end. I'm a real hard nose when it comes to decent quality audio, so please, if you're going to duplicate the rig, bear in mind I've spent some time working out the values of the audio section to give the signal a lot of audio punch, without splattering.

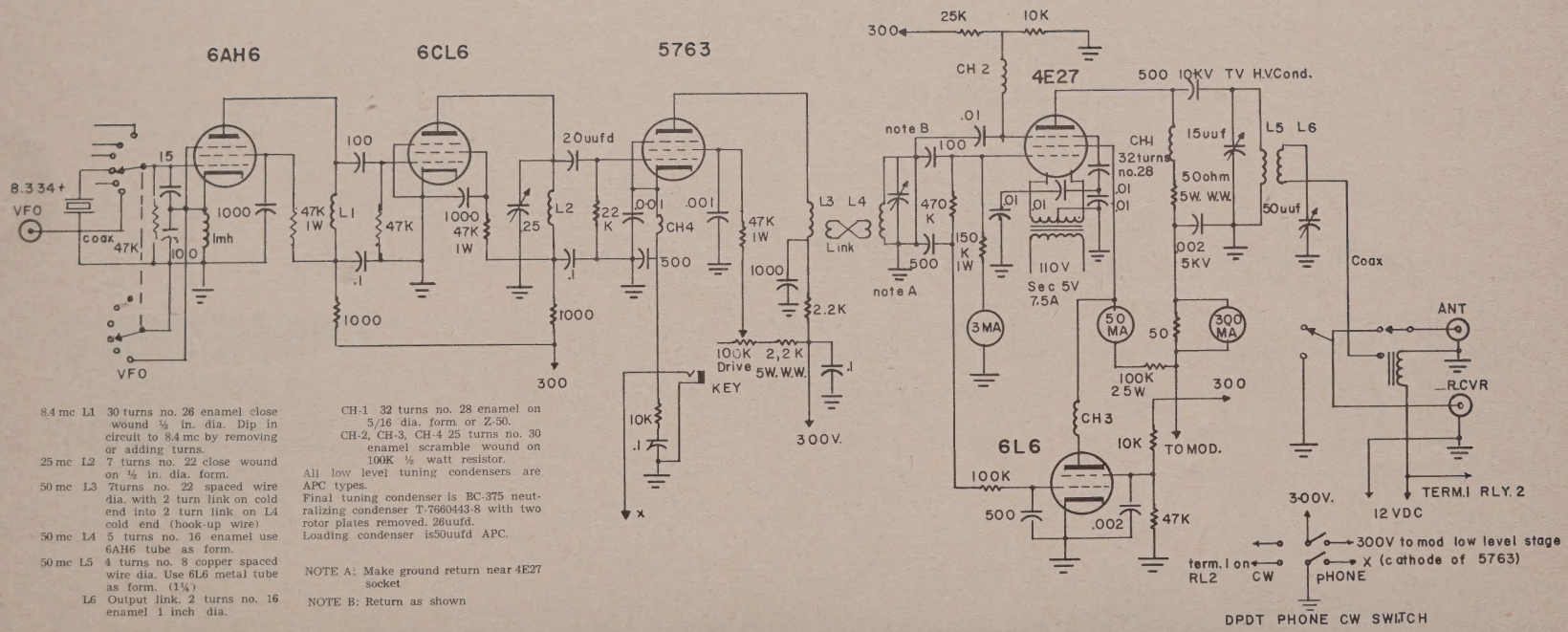
Audio

As shown in the schematic, the audio drops off 6 db below 300 cycles and falls off rapidly above 3000 cycles. Distortion as measured on a Hewlett Packard Distortion Analyzer at the grids of the 811's is under 6 percent. In as much as I never intend to play music through this amplifier, I didn't consider this small amount worth looking into further.

The low level audio stages are quite conventional, the only difference from standard audio practice is in the choice of values for the coupling condensers. Also those grids that can cause trouble with feed back have RC filters. Note the RC filter following the gain control between the first and second stages. In many cases I have noted a tendency for audio amplifiers to feed back when the gain control is full



Looking inside the final compartement we see the loading condenser on top to the right of the tank coil. Final tank condenser is below the tank coil. Note the TV type 10KV high voltage knob condenser to the right and rear of the 4E27.



8.4 mc L1 30 turns no. 26 enamel close wound ½ in. dia. Dip in circuit to 8.4 mc by removing or adding turns.

25 mc L2 7 turns no. 22 close wound on ½ in. dia. form.

50 mc L3 7turns no. 22 spaced wire dia. with 2 turn link on cold end into 2 turn link on L4 cold end (hook-up wire)

50 mc L4 5 turns no. 16 enamel use 6AH6 tube as form.

50 mc L5 4 turns no. 8 copper spaced wire dia. Use 6L6 metal tube as form. (1¼)

L6 Output link. 2 turns no. 16 enamel 1 inch dia.

CH-1 32 turns no. 28 enamel on 5/16 dia. form. or Z-50.

CH-2, CH-3, CH-4 25 turns no. 30 enamel scramble wound on 100K ½ watt resistor.

All low level tuning condensers are APC types.

Final tuning condenser is BC-375 neutralizing condenser T-7660443-8 with two rotor plates removed. 26uufd.

Loading condenser is50uufd APC.

NOTE A: Make ground return near 4E27 socket

NOTE B: Return as shown

open. The simple RC filter as shown in the schematic will allow full gain operation without the usual audio howl that takes place in many modulators.

The first audio stage is a resistance coupled pentode (6SJ7) which has a voltage gain on the order of 100. The output of this stage is coupled to the gain control which varies the audio on the grid of the 6SN7. The 6SN7 is connected as a self balancing paraphase inverter. Its push-pull audio output drives the 6BX7 grids. The 6BX7 is a low gain, high transconductance triode which works very nicely in driver service. In as much as the 811 grids reflect a changing input impedance to the driver, a tube with a low plate resistance is a necessity and the 6BX7 with its small envelope does just this job.

The push-pull output of the 6BX7 is transformer coupled to the 811 grids. The driver transformer in my case is a TCS unit (surplus) modulation transformer that is working backwards. In order to come up with a push-pull connection, a small 6V6 transformer, or equivalent, is placed across the single ended winding. If you can't find this transformer, the parts list does list a commercially available transformer. Be sure the transformer you get is suited for class B service.

The modulation transformer in the parts section is also surplus. However you will find another commercial transformer listed. If you use a multi-match type transformer, select the primary and secondary taps to represent 12,000-15,000 ohms to the plates of the modulator tubes. Secondary impedance is determined by adding the plate and screen current of the final and dividing the sum into the applied voltage.

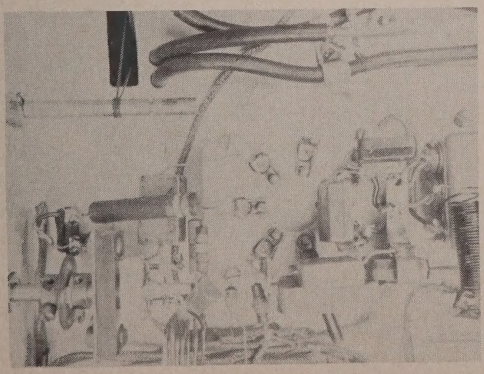
The high level clipper is simplicity in itself. It requires only three additional parts; a filament transformer, 6AX4 tube and a 20 watt 7500 ohm resistor. Actually the circuit doesn't clip the negative peaks at all. The circuit loads the modulation transformer on negative peaks, tending to decrease the possibility of splatter from excessive negative modulation cutting of the RF carrier. Please notice however I said it tends to decrease splatter. By using excessive gain, it is quite possible to over modulate the carrier. Use of the negative clipper gives you a little leeway before you start splattering, but don't think it is a cure all. Use a little common sense and the clipper will do the rest for you.

Two relays are used in the transmitter proper. Both are surplus items, and unless you are suffering with an excess of loot, I suggest that you shop for the relays in your local surplus mart. The antenna relay need not have ceramic insulation, but the relay that shorts the modulation transformer while in the CW position must have ceramic insulation . You will notice that the other set of relay contacts remove the plate voltage from the 811's. Both relays are operated on 12 volts DC. I prefer DC relays for many reasons; availability, low cost, and lack of buzz and chatter are a few of these. The power supply chassis has a 12 volt DC supply included, or you can use an existing supply. The antenna relay I used was taken from a command Series transmitter. It has been converted to 12 volts by connecting the coils in parallel.

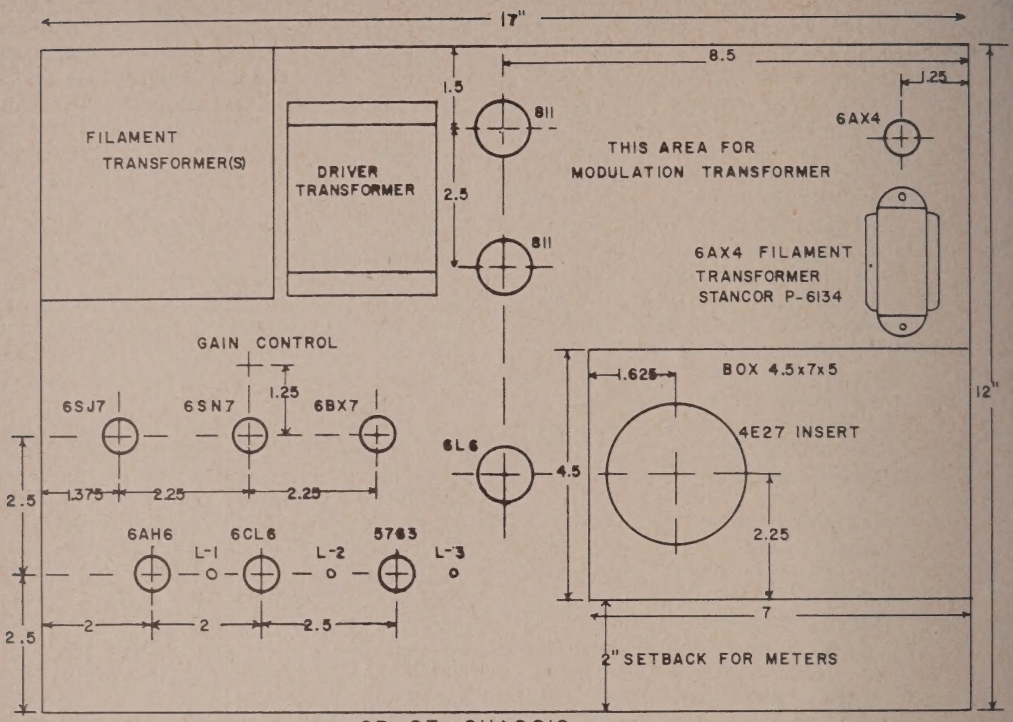
RF Section

The RF section uses a 8.333 mc plus crystal(s) to generate the carrier. The 6AH6 operates straight through at 8 mc and drives a 6CL6 as a tripler to 25 mc. The plate of the 6CL6 is tuned from the front panel for maximum drive to the 5763 doubler driver.

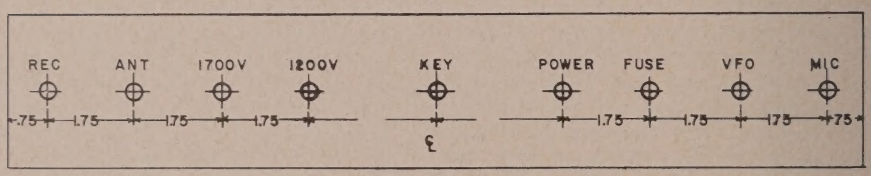
The plate circuit of the 5763 is link coupled to the grid of the 4E27 with two turn links at the cold end of each coil. The two links are connected with twisted hook up wire. Peak L3 at about 50.25 mc with a GDO and forget it. Grid link L4 is tuned by the final grid tuning condenser to the operating frequency. I'm assuming that you own or have access to a grid dipper, so peak all circuits with it. Grid drive to the final should be maintained at 1.4 ma by peaking all cir-



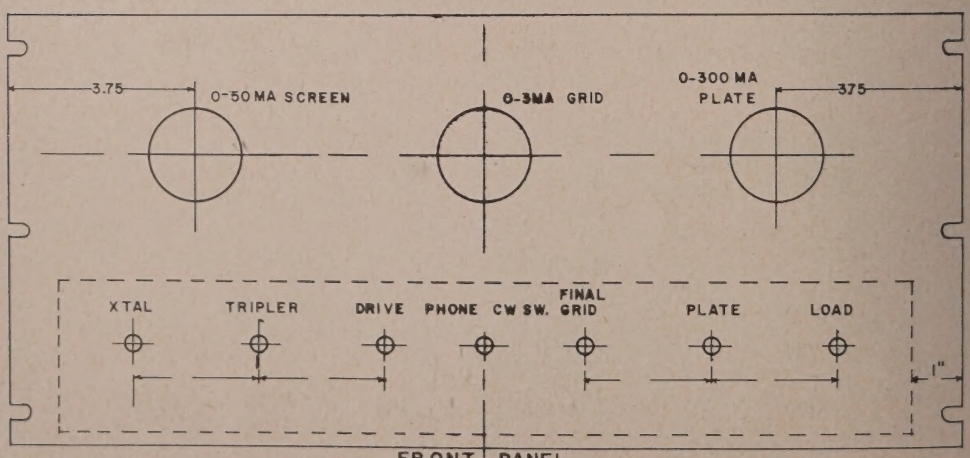
Below chassis view of the final stage.



TOP OF CHASSIS 17x12x3 aluminum



CHASSIS FROM REAR



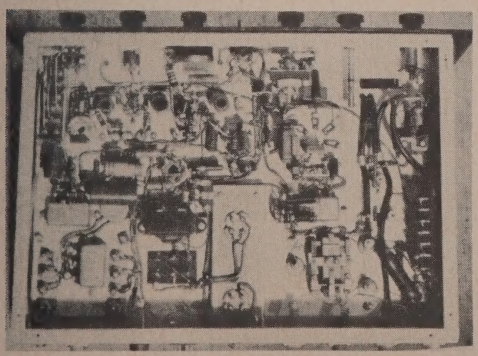
FRONT PANEL

cuits and reducing drive with the drive control. When you start wiring the final, study the picture of the socket by-passing. Don't stray too far from what is shown or you'll find yourself in trouble. The 4E27 is submounted ¾ inch below the top of the chassis, which keeps the top of the plate below the top of the front panel. Note also that the 811's are submounted the same amount.

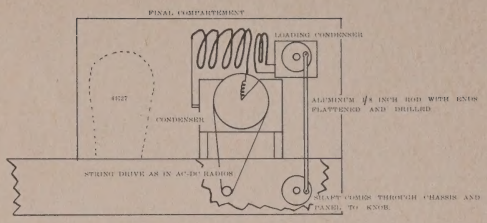
The final plate tuning condenser is from the surplus BC-375 tuning unit. It originally was a neutralizing condenser. To put it into the six meter band remove the two outside plates. Mount the condenser on its original ceramic standoffs for clearance purposes. Ground the frame to the chassis with a two inch wide piece of copper or brass strap. The plate coil has one end flattened and drilled, and then bolted to the frame of the condenser. The TV high voltage condenser is mounted on the hot end of the coil with a small strap of copper or brass. This strap also serves to support the condenser. Note the ventilation holes on the sides of the final tank box. I cover the top of the compartment with a piece of copper screening to allow maximum flow of air, and still keep RF in the box for TVI purposes.

Wiring

In the low level audio and RF stages, use shielded wire wherever you can. Of course, don't run RF grid leads in shielded wire, but run all of your filament, B plus, relay DC leads, all audio (up to and including 811 grids) in shielded wire. Leads carrying high voltage can be run in small coax such as RG-59 or RG-58. Make your grounds to one point at each socket, and not at random all over the chassis, be sure it's a good grounding point directly on the chassis.



Under chassis view of the W6OKR masterpiece.



DETAILS OF FINAL LOADING AND TUNING CONDENSER

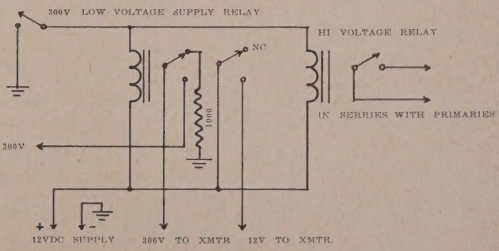
Clamp Tube

Note the use of the 6L6 metal clamp tube. Its purpose is to protect the 4E27 in case of loss of drive, and it holds the plate input down under key up condition on CW. Make all bypassing to the cathode pin on the 6L6 socket. This clamp tube circuit caused me more trouble than the rest of the rig combined. It would go into a form of oscillation on audio peaks, causing audio distortion in the screen circuit. By following circuit design and watching grounding practices you will be spared any similar problems.

Miscellaneous

The transmitter is built on a 17 x 12 x 3 inch aluminum chassis. Don't use a steel chassis as they have an annoying habit of carrying hum currents and fields around to where trouble starts. The front panel is a standard 19 x 8¾ inch.

I believe that with the schematic, other drawings, and photographs, you shouldn't have too much trouble in building this stable well modulated rig for the six meter band. I'll have more photos and power supply details in a later installment.



CONTROL CIRCUITS

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David M. Dressler K6MLE
14833 Valerio Street
Van Nuys, California

Adventure Into The Unknown:

Report on the Hieronymus Effect

I. INTRODUCTION

The radio amateur is renown for his pragmatism: he accepts something on the fact that IT WORKS: he is not impeded by a "But this can't possibly work!" attitude. This is to be an account of a phenomenon which will, however, strain the pragmatism of even the most open-minded amateur. As the fantastic story of the Hieronymus Machine unfolds, it is vital that the reader keeps this fact in mind: THIS IS NOT FICTION.

History

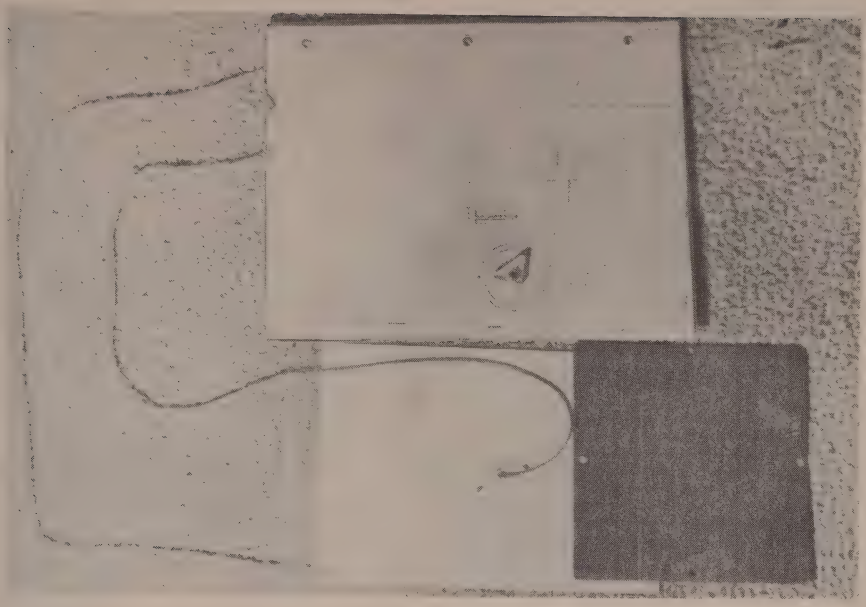
The archetype device, named after its inventor, Mr. Thomas G. Hieronymus, was electronic in nature and used for the purpose of detecting and analyzing materials present in the earth. Hieronymus claimed his detector worked on the principle of radiation analysis. His theory was that each element present in nature emits its own characteristic radiation, which may be detected and analyzed, thereby making identification of the element possible.

The operator of the Machine placed one hand on a 'sensor plate' and then rotated a tuning dial with the other hand. This dial mechanism turned a prism or lens. (It should be noted that ordinary prisms and lenses were used to refract or focus the presumed radiations, which were not supposed to be light waves, nor necessarily within the light spectrum). The operator determined what element or combination of elements was present by noting the occurrence of tactile sensations in the hand on the plate and by referring to the position of the tuning dial.

Years after the invention of the first model of the Hieronymus Machine, John W. Campbell, Jr., editor of Astounding Science Fiction magazine (the same magazine, renamed, which accurately described in detail the construction of the atomic bomb, nuclear fusion and space vehicles years in advance), announced a startling new development with the Machine. Campbell found that a schematic diagram of the device's electronic circuitry functiontd as well as did the real counterpart! This was like drawing a picture of a transmitter and using the diagram to work the world! (Heaven help Heath Company!) But was this really so incredible? Perhaps this was just perfection of a completely printed circuit. And who is to say what is conductive material for possibly unknown 'currents'?

Campbell called this new development of the Machine the Type II model. This was, as he termed it, a 'psionic' machine. He attributed the fantastic effect to a symbolic relationship of the parts of the printed circuit. As word symbols mean definite things to the mind, and certain vibrations affect the optic nerve, so possibly the special ink-on-paper symbols affect some portion of the brain. The manifestation of the stimulation, then, might be the tactile sensations.

The latest ramification is the accidental 'invention', by David M. Dressler, of the Type III model. This version, a modification of its immediate pre-



The Hieronymus Machine. Note the plate on top of the sensor coil. The sensor coil is connected to machine by ordinary string or thread.

decessor, the Type II model, uses identical circuitry, but no ore or mineral samples — no known source of input at all! Yet tactile sensations are reported at only certain dial positions. The apparent paradox of output without input may be logically resolved if one simply assumes that the Machine does not radiate or have output, but absorbs something (from the human operators possibly) instead. In that case, output meters would not indicate outflow from the Machine when connected to the sensor plate's leads. And, indeed, no output indicator (galvanometer, VTVM, oscilloscope, compass, Leyden jar, Wheatstone bridge) has ever detected outflow when put in conjunction with the device, which may or may not prove something. It must be added, however, that a sensitive skin resistance meter was connected to the subjects during testing, and deflection of the needle, concurrently with report of tactile sensations, indicated definite physiological response to the Machine's effect. And this is a major step toward purely objective investigation of the phenomenon.

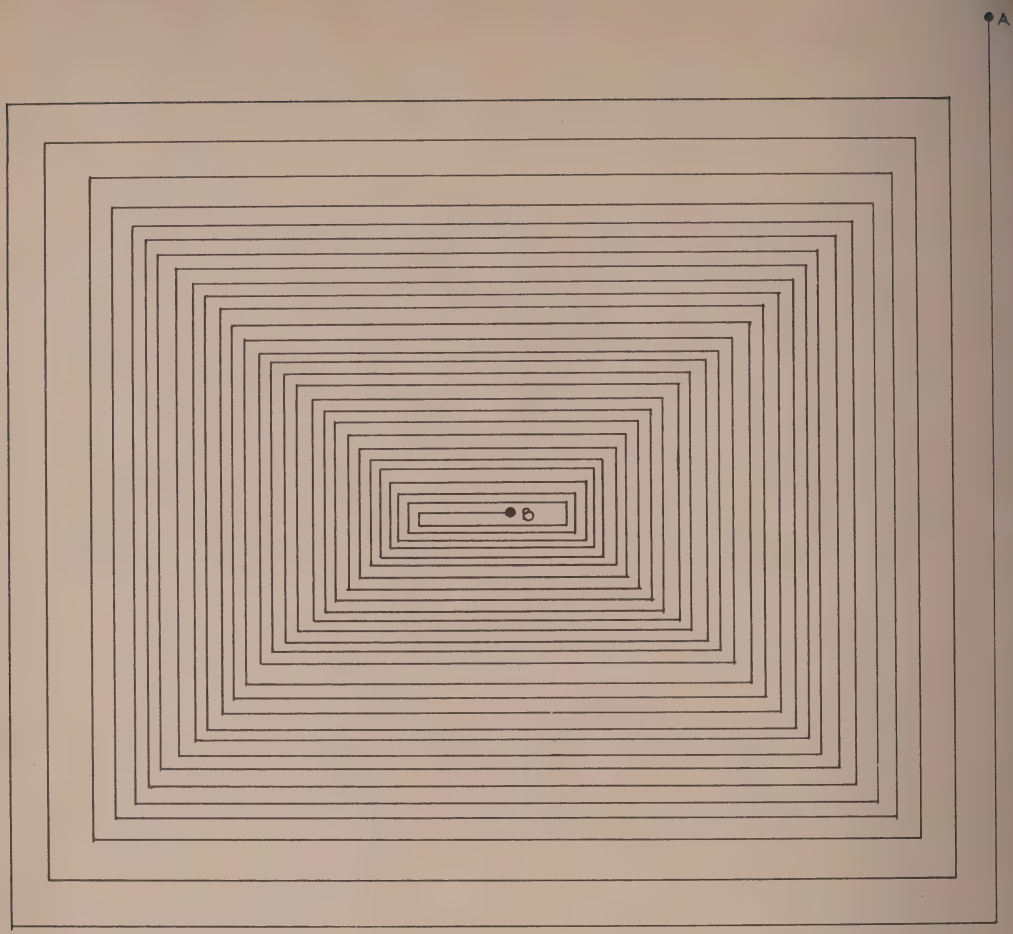
Other Data

The human brain is still an 'unexplored space between the ears'. It is possible, as Campbell seems to suspect, that the Machine works only in conjunction with the test subjects and is somehow involved with the 'ESP-sense'. But if this explanation is repugnent, then perhaps this one is a bit more mundane: The Machine may merely be some type of radio frequency detector, converting rf to tactile sensations (such as heat and electrical tingling). Until further investigation, this remains only speculation.

Specific characteristics of the phenomenon: Subjects report reactions at only one (never more than four) dial positions in the 360 degree rotation (not everybody is sensitive) The 'radiations', or whatever, may be beamed like microwaves across short distances; the Machine can be worked over the telephone, using the phone wires as extra-long sensor coil leads, but the time delay between 'resonance' and reaction is several seconds (indicating there is no ordinary electron flow involved); magnetic fields seem to affect the performance; Machines in parallel increase output; shorting out parts of the symbolic circuit stops the effect entirely; ESP seems to be an affecting factor in Machine operation.

Construction

The Type III model is built by copying exactly the diagram of the circuit in any kind of ink on plain paper. The size of the circuit is unimportant, so long as the relative sizes of components and their positions remain unchanged. The schematic should be covered by

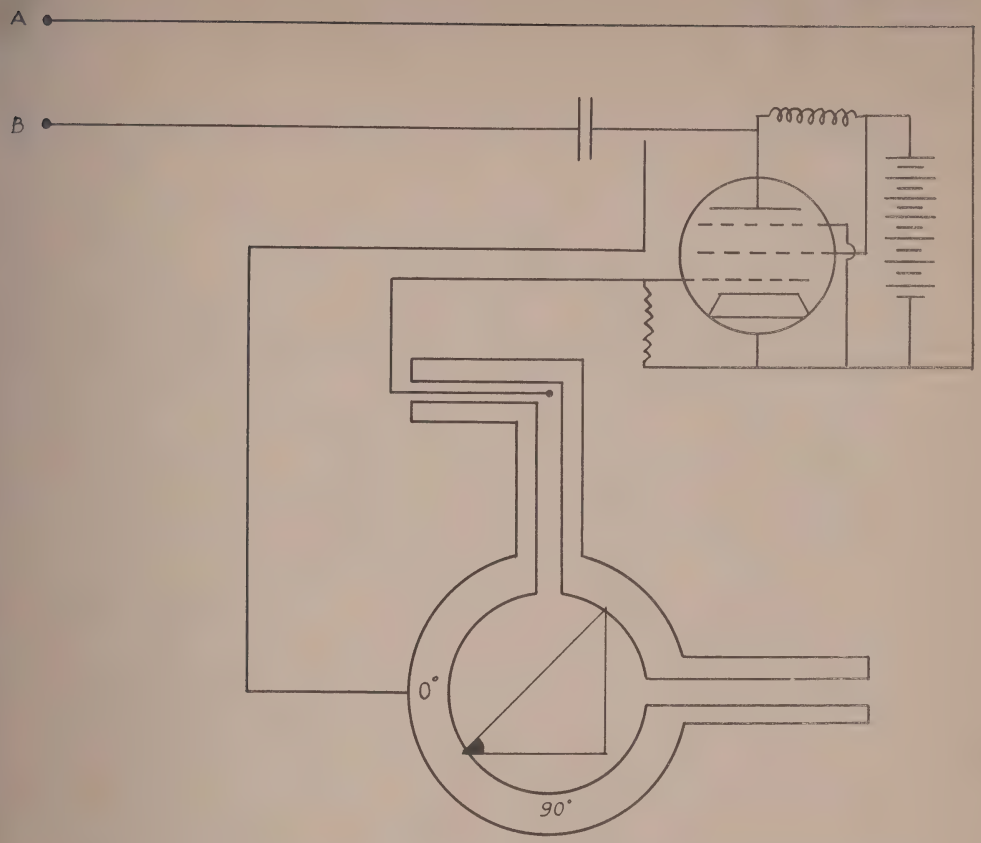


thin transparent plastic for protection and mounted on a board for rigidity. The 'prism' is absolutely non-critical. Cut it from a scrap of lucite or plastic. Make the prism a 45-45-90 degree right triangle which just fits within the circumference of the inner circle on the diagram. No buffing or polishing is necessary. A hole should be drilled through the board, schematic (in the center of the aforementioned circle), and prism. A shaft or vernier dial is used to mount the prism to the diagram in the center of the circle and the position indicated in the schematic.

The sensor coil is a spiral drawn in ink on paper and connected to the Machine's 'terminals' (lettered A and B) by means of two lengths of thread. A sensor plate should be placed on top of the coil for best results; experimentation will have to determine the most efficacious material. (Steel and aluminum have been used successfully by this experimenter).

The rotation path of the prism should be calibrated in degrees from 0 to 360 This may be a tedious job, and so it is suggested that two protractors (dime store type) be taped back-to-back on the plastic covering of the schematic. This will provide an inexpensive and accurate dial.

Testing is done by asking a subject to place one hand on the sensor coil (or plate atop the coil) while the operator slowly rotates the prism at about 1 rpm. The subject should be advised to tell the operator when he feels a sensation in or on the hand on the plate, whereupon the operator must stop the dial rotation immediately. The position of the dial (where the vertex of the prism points) is noted, and if the subject consistently reports a sensation at the same point or points (usually numbering fewer than four), that subject is positive. The test subject should never be briefed on what he may feel; he must not be told about



Copy the schematic above exactly, using any kind of ink on plain paper.

the Machine or shown the circuitry during testing.

Conclusion

There is statistical evidence, gathered in a strictly orthodox and scientific manner, which — if not actually proving the existence of the Hieronymus phenomenon — certainly indicates the presence of something paranormal. And these indications are important; they have to be taken seriously, must be studied.

The only way to prove the effect exists — or does not exist is to test it, not ignore it. True, if the effect exists and is nonlogical, nonscientific as we know it, then maybe logical, scientific methods of investigation are the 'wrong tool'. However, the advantage of the scientific method is that the results thereby obtained are more likely to be accepted, the conclusions valid. For these paramount reasons, the scientific method must be used in any invstigation of the Hieronymus phenomenon.

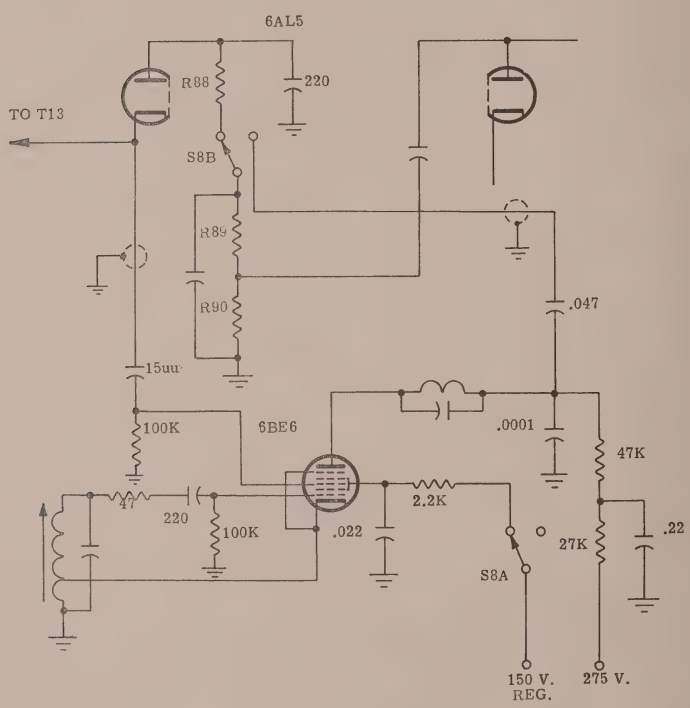
It is hoped that sufficient numbers of experimenters have been stimulated to launch an intensive investigation. There is already too much positive evidence to ignore the Hieronymus effect.

Remember — if a phenomenon appears to contradict important laws of science and opposes common sense, this does not automatically refute the phenomenon. Electricity was regarded with a great deal of uncertainty, and that phenomenon (manifestations of which were sometimes called Saint Elmo's Fire) had the same air of mysticism about it that preternormal phenomena have today. Electricity was welcomed with open light sockets. Why not give paranormal phenomena the same chance to be accepted?

This could be the dawn of an exciting new concept — or perhaps the confirmation of something as old as man himself. In either case, this is an opportunity to fold back a corner of the cloak that enwraps the Unknown. This an adventure which must not be missed!

M.C. Smith, W6GMC 614 Bradbury Rd. Monrovia, Calif.

Product Detector for the SX-88



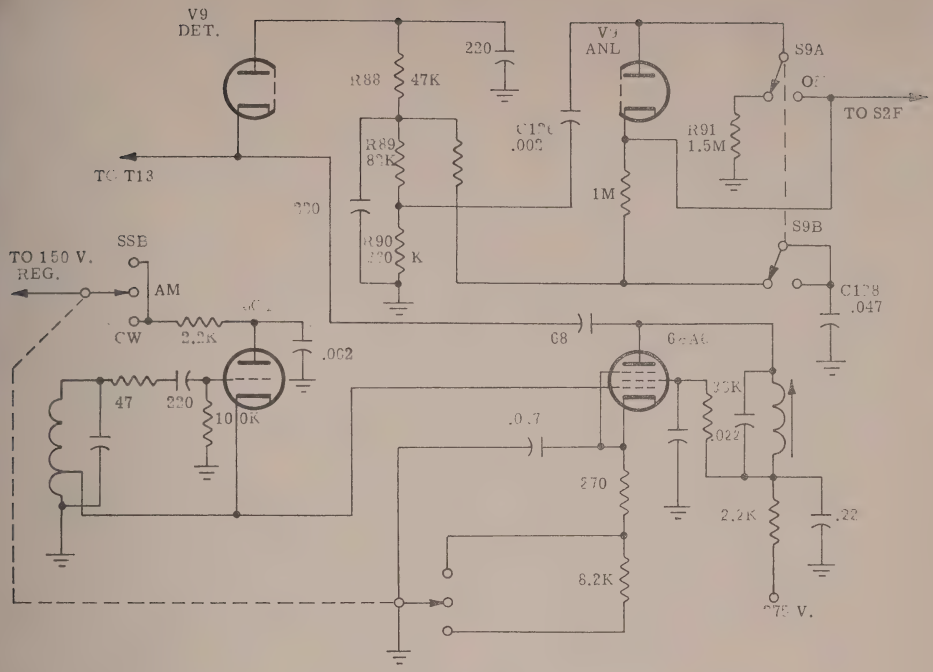
Modifications showing the changes only

After operating a receiver with a product detector I was very favorably impressed with the ease of setting up a sb signal. And this set cost considerably less than my SX88. It seemed that something should be done.

My SX88 uses a 6C4 as a BFO and plate tuned rf amplifier to control the amount of injection to the diode detector. This tube can be discarded and socket used for a 6BE6 mixer-bfo. Inspection and consideration of the present circuit and the desired one, showed most of the parts already available in the set. Only the 6BE6 need be purchased along with three half watt resistors, a 10 mmfd. condenser and a bit of shielded wire or small coax. The tuned circuit used in the amplifier may be retained to reject the bfo frequency from the audio output from the mixer.

CONVERSION

Remove all the condensers and resistors except those attached to the bfo coil and the tank circuit tuning condenser. Replace the bfo leads from the coil to the correct 6BE6 socket terminals. They can be determined- from the previous connections on the 6C4. The red wire which had a 2200 ohm resistor hooked to it comes from the CW-AM-SSB switch on the panel. This will be used to control the functions of the product detector. Hook this red wire



Original Circuit

to a tie point (on the socket). Connect a 2200 ohm resistor to the screen terminal of the 6BE6 and a .022 mfd. from screen to ground. A 100k half watt resistor runs from pin 1 to ground. A 100k half watt resistor is placed on pin 7 to ground. A 10 or 15 mmfd. condenser is connected from pin 7 to the coax terminal in the bfo compartment. It is the only coax connection so it is easily identified.

One side of the tank circuit is connected to pin 5 of the 6BE6. There is an orange and yellow wire hooked to the terminal strip. Un-hook them. The orange wire is the 275 positive wire and is attached to a vacant terminal on the strip. A 27k half watt resitor is connected from this terminal to another vacant terminal. Now a 47k half watt resistor is connected from the 27k resistor to the unused side of the tank circuit. A .0001 mfd. condenser is placed from this point to ground and a .047 mfd. condenser is also run from this point to a tie point. The .22 mfd condenser is used to by-pass the junction of the 27k and 47k resistors.

The short jumper on the AM-CW-SSB switch is removed. (This is on S8A side). A shielded wire is run from the lower terminal of S8B to the .047 mfd. condenser in the bfo compartment. The wiring within the bfo compartment is now finished and the cover can be replaced. Pull the yellow wire out of the bfo compartment and remove it from S8B. Also remove the 8200 ohm resistor from S8B and also the ground wire from the center terminal. Locate and indentify R88. Remove it from R89. Run sheilded wire or coax from R88 to the bottom terminal of S8B. Run a shielded wire or coax from R89 (the point where R88 was lifted from) to the center terminal of S8B.

That concludes the modification. In operation the panel switch will no longer have a neutral center position for AM. The lower position will be both sb and cw operation and the upper position marked cw will now be used for AM operation. The noise limiter is useful on both AM and CW-SB with or without AVC.

Put the set on AM, turn AF gain up, selectivity on .25kc and align T13 for max. gain.

The result of this modification is noticiceably better sensitivity on cw. The time involved in setting up a SSB signal is about half of that required with exalted bfo. In practice, the rf gain control will be left wide open on SB, unless it is a local station. AVC is used on SB also.

All the set needs now is a Q multiplier and selectable sideband operation to make it completely modern. For the life of me, I can't see how it can be installed without butchering up the panel.

LET'S MOUNT A MAP

E. H. Marriner, W6BLZ
528 Colima Street
La Jolla, California

As I sit in my shack and gaze at a huge map of the world which I just mounted on the wall in front of me, I sit enthralled. How fine it feels, when in contact with an amateur in Australia, to pin-point his city on the map in a matter of seconds. I don't even have to leave my chair to hunt for a map, it is right on the wall. I look and can watch as I span the Pacific Ocean and 6,000 miles or so of space and chat with a personable chap way down under. In that manner I have made friends in over 87 countries throughout the world, each represented by a various colored pin stuck in the map. With the map, my rig and imagination, I have become a world traveler vicariously without leaving home.

It has made me pause and reflect on the long way we have come, how the world has been brought so much closer together in the last few hundred years. Back in 1474 the world of that time didn't even know our continent was in existance. In that year Toscanelli made a map which was used by Christopher Columbus as a sailing chart. You can see by it that Toscanelli had no knowledge of our continent which would bar the way to the navigator trying to reach Asia by sailing due west from Europe.

I look at my modern world map and it makes me think about the people

One of the main reasons why the United States government felt this way about our amateurs is probably expressed in what Brig. Gen. John B. Bestig, of the U. S. Air Force told a group of amateurs at the First Annual Cleveland Amateur Radio Convention. (2) "Communications are really the heart of the defense problem," Bestig declared, "and the military makes good use of hams. During World War II there were 50,000 hams in this country. The miltary could do nothing without this backlog of amateurs to draw upon."

"In recent years", he stated, "the role of the radio amateur in disaster work has been outstanding. This vital experience gained in maintaining radio communications during periods of flood, tornadoes, blizzards, and forest fires will aid the country tremendously in event of an enemy attack", he said. "Their electronic background is worth its weight in gold to the armed forces."

General Bestig urged his audience to pursue new developments in electronic products and applications, to help newcomers in every way possible to join the ham fraternity, and finally, to be 'dedicated' radio amateurs.

Do you really know what is meant by the word 'dedicated'? Well too often these days the younger, and yes some of the old timers as well just take their hobby for granted. They put nothing into it to further the cause or the state of the art. Many just barely pass the license examinations. They purchase every piece of gear from the microphone to the antenna system. Then they use the precious airwaves for ordinary back fence gossip or a hello — goodbye see you later type of conversation. The same ones are speaking today the same monotonous words they spoke ten years ago. All they want to be is communicators. They do no traffic handling, have no technical interests and no realization that they are lowering the estimations of our capabilities both technical and useful to our varied listeners.

This type of 'Status Quo' has got to stop soon, or we will all smother in the crampness of our present day frequencies. Possibilities for even less communication space are probable when the chips are down at the next International Conference.

(1) Second National Symposium on Global Communications, Ninth National Conference of the I.R.E. Professional Group on vehicular communications. December, 1958.

(2) Excerpts of speech: Copied from Military Electronics, December, 1958.

Even an admirer of the amateurs like Gen. J. B. Bestig would vote us down when it came to giving us choice frequencies over his service requirements.

What then are we amateurs going to do? We must develop the higher microwave frequencies in the same way men like Marconi, Godley, Schnell, Reinartz, and Deloy did back in the dark ages of radio between the years 1912 to the early 30's. Neither the challenge of the higher frequencies nor the state of the art stopped their tremendous efforts to push the distant limits to then unheard of spans for wireless communication.

What with todays space age, it is just that. Space communication is possible on the microwaves. Far greater distances than ever imagined have been made possible by the advancement of our electronic industry and recent technology in space communications. Why hasn't the amateur kept pace with the impending era of great progress in global communications? Why are there only a pitifull handfull of progresive thinking amateurs pioneering the microwaves? The answers to both of these questions should not have to be answered with excuses but: I'm afraid it is so. We should have many well trained ex-servicemen who worked with radar and microwaves during their tour of duties. Therefore the answer must be laziness on our parts because it is just a little different from what we are used to on the lower frequency bands. The equipment is available to us at a extremely low cost figuring what Uncle Sam paid for it and what it is selling for these days on the surplus markets. I mean all those crazy looking pieces of plumbing and odd looking tubes they call radar components.

Do all amateurs realize that there are untapped millions of kilocycles for us to move into? No, but we are lucky in this respect as for a single service we have the largest allocation of frequencies available to us then any other service or organization in the entire world. But we must make use of them before these too are taken away from us because of the lack of activity. The present available kilocycles between our 1215 MC. band and our 22,000 MC. band has a total of 2,210,000 kilocycles. This total does not even count the unlimited millions given to us all over 30,000 megacycles.

This new era in our history could extend our communication possibilities way be-

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DX report

Dick Spenceley KV4AA
Box 403, St. Thomas
Virgin Islands

Walt DL9PF, in a trip beset by troubles, managed to make about 3,000 contacts from Andorra, as PX1PF during his fifteen day stay. Illness, after five days, forced his companion operator to return home and Walt was on his own for the last ten days. He plans to return to Andorra next summer with a bigger rig on cw and ssb and may be accompanied by Harry DL7AH.

SM5WN/LA P went QRT in Spitzbergen on August 4th.

VK5BV's trip to Portuguese Timor, where he will operate CR10AA, was delayed until August 20th due to delayed passport. If this visa does not come through before the 20th Ray will regretfully have to call the trip off due to his inability to further extend his military service in Darwin plus impending blessed event.

VQ8APB was last heard from the Brandon Islands on August 11th. It is understood that he accompanied a Catholic priest to this spot on their yearly inspection tour which lasted a week. This island group should qualify as a separate country.

VQ1HE (VQ3HE) and VQ1TW showed up in Zanzibar on August 14th, for a one to two day stay on phone and cw. QSL's go via Box 2387 Dar-es-salaam, Tanganyika. Operation was very QRS on cw. Ops were John and Tina.

The Seychelles operation of VQ9ERR (VQ4ERR) and VQ9AIW (W0AIW) is proceeding on schedule and they were due to be heard about August 22nd. Frquencies on cw are 14020, 14070 and 21020 and on ssb, 14301, 14307 and 21420. No calls will be answered on frequency. W4IYC will handle the QSL's for VQ9-ERR, while W0DVN will do that chore for VQ9AIW.

VK0TF, 14070, operates from the Australian Antartic Davis Base. QSL's go via VK3YS.

Another Aaland Island expedition will be launched by OH2YV/0 and OH2XK 0 who will appear from that spot starting September 22nd with cw and am phone. The Turku gang, consisting of OH1NK, OH1ST, OH1RX, OH1UZ and OH1NM spent August 12th and 13th on Aaland 14 and 21 cw.

Brian VS9OM, is now back at the Sultanate of Oman with higher power and full permission to operate from that area. He was heard knocking them off on 14083 kc around 0100 GMT. QSL's

W1YPH, Leona Peacor Stoneham, Mass.

go via W6BSY.

FG7XG has been heard on cw of late, near 14077.

ZC5AF Labuan, Br. North Borneo, is on 14080, 1200 to 1400 GMT. QSL via W5QL.

LA3SG/P and LA1NG/P have been active from Jan Mayen Island. LA3SG/P heard between 14060 and 14080. Length of stay is unknown.

Photostat of letter giving permission for EA9DE operation in Ifni was received by W4KVX and cards are being accepted by W1PO. Thus, rumors that this operation was illegal are squelched.

GB2AC operation from Ailsa Craig resulted in many QSO's but only a handful of W contacts. A similar expedition goes to Rathlin Island, off the coast of Northern Ireland, on September 11th and will sign GB3RI on all bands cw and am phone .QSL to GI3HXV. These are not 'new ones'.

We see that HRH The King of Nepal is licensed 9N1AA — If you hear a CQ in Nepalese —— watch your language! W1CJ/3 hopes to leave for Nepal by August 18th at the latest. He will work some cw and hopes to be on by Sept. 1st. Rig is a Pacemaker and Thunderbolt.

Cal, presently YA1IW, expects to QRT from Afghanistan in October. He has asked permission to operate from VU4, VU5 and AC5. If this comes to pass it will take place in early 1960.

Al Keltz, W2TXB, Rochester, New York

FB8CD, Comoro Islands, should be found around 1700 GMT daily on 21120.

K6EVR won the recent VP9 contest which gives him an expense free vacation for two in Bermuda for one week.

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Shack on Aves Island, YV0AA-YV0AB, July 1958. Photo taken from metal flag pole which served as support for one end of antenna. Yasme II in background

Sidelights on Sideband

Lester A. Earnshaw, ZL1AAX
Box 51, Warkworth, New Zealand

DBs, S METERS and THINGS

The handbook that goes with my Japanese slide rule has this to say - and I quote - 'We would like to call reader's attention that slide rule is an instrument to work out rough estimation snappy'! I mention this for there is more than a rough parallel between the use of a slide rule and the use of an S meter particularly when the latter is used to measure sideband suppression, front to back ratios, relative strength etc., especially when the results are quoted in dbs.

Recently, on fifteen meters, there was what appeared to be a measuring contest among a bunch of W6s concerning the sideband suppression of a W1. The reports differed by more than 12 dbs! another occasion I heard a report of of negligible suppression when my own 'rough estimation snappy' measurements made with the use of the S meter made the suppression better than 35 dbs.

It would seem from the above that the S meter as a measuring instrument has not the accuracy of a slide rule and this I find to be woefully true.

Before going into the pros and cons of the case, it would perhaps be fitting to take a good look at these things called dbs.

DBs - WHAT THEY ARE

Dbs are not measures of quantity, of height, of strength or of things but of ratios. We don't say 'You have a strength of 80%'. Neither should we say 'You have a strength of 60 dbs. We can say that you have increased in strength by 80% and it is absolutely correct to say that you have increased in strength by 60 dbs or that you are 60 dbs stronger than something else. This 'something else' might well be the signal generator with which the receiver was originally calibrated.

WHY DO WE NEED DBS?

Why not be satisfied with the fact that Bill is say fifty times stronger than Joe and leave it at that? Well you may. There is no reason at all why you shouldn't. This system however does get cumbersome as I hope to show later.

The human ear does not measure in a linear manner. That is, if you increase the power from an amplifier say 10,000 times the amplifier will not sound 10,000 times as loud. It is quite usual for amplifiers to have a 60 db gain. 60 dbs is an increase of 1,000,000 times. Enough to blow you and your ears to kingdom come, surely! This would certainly happen if it were not for the fact that the ear has a built in AGC system which automatically reduces the sensitivity when someone turns up amplifier gain. This results in the ear having an approximately logarithmic scale. From this and similar natural phenomenon has has come our DB scale. If we double our power (as distinct from voltage or current) we get a 3 db increase. If we double our power again, which means that it has now been increased four times, we get another 3 db increase, a total of 6 dbs. If once more we double our power we get a further 3 dbs, 9 dbs altogether. This is an increase of eight times. At ten times you break even at 10 dbs. At 100 times you get 20 dbs. At 1000 times you get 30dbs and at 10,000 times, 40 dbs. Hearken now, 40 dbs is equal to 10,000 times. So that if your sideband suppression is 40 dbs, the wanted sideband is 10,000 times stronger

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San Diego Zero Beat

Mt. Soledad Amateur Radio Club emergency van. Left to right W6LYF Hal Lindsay, Wes Lees K6JPI, John Greer K6HQJ. The van has four operating nets on 2, 6, 10 and 75 meters. The generator is a 3500 watt 115 vac job mounted in the trailer Nice huh!

E. H. Marriner, W6BLZ
528 Colima Street
La Jolla, California

Wow! Summertime and ARRL Conventions. I wonder if the people who attended the SW Div ARRL Convention at the Huntington-Sheraton Hotel in Pasadena hope the next one will be held in the fall? Good old summertime, an oppressive season invented by hotel owners when every amateur is thinking about vacation trips combined with conventions. Out where cold water comes out of the cold water faucet and nobody ever comes out of the bathroom. If you wish you can come back with a good sun tan, it's all yours for the basking. Summer conventions are a few days of playing followed by the rest of the year paying. The trouble with conventions, you get there too late to hear the talks and stay too late to get home and rest after a Sunday pm banquet before going back to work. Perhaps too broke after buying raffle tickets not to work.

There is the magic moment at every convention when you win a prize, or those awful dejected moments when you didn't. Your nice hotel with a shady spot by the swimming pool under the palm trees, with 55 cent hamburgers and 50 cent beer, the bell boys getting the change and the hotel the rest. Did you notice the women's bathing suits around the pool? Never have so many owed so much to so little.

At night fall you eat on the terrace. The moment the flies have quit for the day the mosquitos go to work, amid the back ground clink of glasses just inside at the bar. Did you have a good time? Most of us did despite the confusion. The XYL was 'Queen for a Day' most of us would say.

Cars with mobile antennas occupied all the parking areas and spaces for blocks around. People were afraid to leave the hotel lest they would not find parking space when they returned.

With the banquet on Sunday, very few of the San Diego gang arrived on the scene, not wanting to fight the beach traffic coming back at night. Among those seen, first naturally comes W6CDF, Cecil who wondered how he won the Gonset GSB 100 exciter. They tell me Cecil knocked over the chair when his number was read off and shook so much he couldn't sign the ticket. I saw sweat rolling down his face when he carried the box back to the table. Others mopping their foreheads, K6BPL, W6LRU and xyl, W6BLK and W6YMZ. Some of the North Shore Club gang who had intentions of sleeping in the car but found it too hot; K6VWL Baron, K6VRS Spencer, K6UUU Frand and W6NCS Ken, all went back Saturday night.

Youth! I think all of us had more fun attending conventions when we were younger. Some of us can remember back in the early 30's how the delinquents tied table cloths together, unscrewed lamp bulbs, threw buns and rolled up the hotel carpets and still grew up to be respectable amateurs. One thing I do miss are those long panorama pictures they used to take, with the whole group assembled on the

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VHF Record

Bob Cooper K6EDX
820 Tully Road Modesto, Calif.

OCTOBER 9, 1959

This will be the one day that VHF operators on 6 and 2 meters all over the world will look back upon years from now with particular enthusiasm, as they recall the most unusual opening in VHF amateur radio. We have had to wait 13 full years, and for another chance at the same type of opening, we can count on waiting another 13 years. What is going to be so special about October 9? Well, first of all this is the date that the re-occuring meteor swarm named the Giacobinids and our planet earth come into close contact. This is the day our earth's trajectory takes us through this particular swarm of dust and stone particles, which will bring us the most spectacular visual and radio affects of a meteor shower we are ever likely to to see! John Q. ham with his 100 watt rig and average antenna on six and two should be able to work out on meteor burst work. This is the day for the big push on 144mc. By many conservative estimates, two meter work over distances of 800-1400 miles on cw by pre-arranged schedules should be like shooting fish in a barrel, or to put it another way, like working 50 mc meteor scatter during a minor shower (such as coming up December 10-13). It won't be as easy as rag chewing across town, but if you can arrange schedules on 144 with a good setup at the opposite end of the line, you will probably make contact.

A few rules to follow if you will. Working cw is one thing for a phone man, but working meteor scatter for a phone man can be just a 'little trying' on the old patience. On six meters, bursts are likely to be close enough together to allow Q5 copy on cw. In fact A3 work should be possible during the 4 hours of the peak opening. Coming up to the peak and going away from it when conditions are a little ragged at best, stay away from telling the fellow what you are running, or your grandmothers name. Stick to the essentials: Get your calls across and get a 'R.R.R.' to the exchange of correct call signs. Get his signal report across, you should repeat it time after time (ie. 459, 459, 459 and then stand by with a 'BK'). If he copies his report he should send a 'R.R.R.' signifying he has his report, then he will start in on ur report, repeating it over a few times, then standing by for ur 'R.R.R.'. If you didn't copy an feel he is listening try a 'rpt, rpt, rpt, several times indicating you don't have your report yet. Once you have your report across to him and he signifies he knows his report with an R, and you have your report and have told him so with an 'R.R.R.', then cut the contact off with another exchange of calls. Now several dozen methods of meteor burst work have been evolved. Some fellows believe in 30 seconds of transmission followed by a break from the other station. This allows maximum use of one burst in case you get a good one for a minute or two, then both stations can get the info across on one burst. Still others transmit for five minutes and listen for five, following a pre-arranged sked with WWV time checks. In either

case, find out what the other station is using as a method before going ahead with skeds. In any case, random calling and working is not likely to work and you can save yourself a good deal of grief by making sure the other fellow and you understand each other. Needless to say on two meters, you will need close coordination and a good deal of patience. What ever else you do, make sure the station you are going to schedule understands where you will be in the band, when you will be transmitting and for how long.

EXTRA HINTS

On 50 mc an AØ carrier transmitted for one minute at the start of a sked helps the other fellow spot my exact frequency and it allows him to tune his receiver on me for best copy, so he doesn't have to try to peak the receiver while copying when the sked begins. Under the unusual conditions of the Giacobinids shower you could do the same on 144 mc for added results.

Using a coaxial relay? Tear it down and clean the contact points (especially on receive) with sand paper or a small fine file, for maximum contact and better transference of energy. Every DB helps when working weak signals. Also check contact point tension on both transmit and receive.

When using a crystal for the rig and you want to tell your skedded friend what frequency you are on, I suggest you try to get several good accurate readings on your exact crystal frequency.

Try repeaking the converter, it has probably been a year or two since you checked it out for gain.

October 9, The Giacobinids Meteor Shower. Information has it that that the shower should peak out near 375 bursts per minute! (where as the very good Perseids shower in August near 70 per hour!) The peak time is not too certain at this date, mainly because of lack of adequate astronomical information. In 1946 the shower peaked at 2030 LST (LST, meaning the local standard time at the mid point of the path). The peak really lasts four hours. So you have four hours of very unusual conditions, and about 3 hours either side of the peak during which times conditions will still be very good for burst work. John Chambers, W6NLZ, says the peak this year is expected at 1615 LST (time at the mid point of your radio path) ie., California to Kansas, 1615 LST would be the time over Colorado or New Mexico which is the mid point of our California to Kansas path. This would be MST, so 1615 MST would be 1515 PST (our time) and 1715 CST (Kansas time). For a path of California to Washington, we would work it at 1615 LST which is also 1615 PST. At any rate, plan your eastern schedules first, then work around to your north and south and finally west. Let this column know what you do and hear and run a tape recorder if you can. I am on 144.012 (200 watts cw, 15 element horizontal long yagi) and 50.007 (200 watts cw, 6 element long yagi). That's K6EDX in Modesto (80 miles due east of San Francisco Bay area).

KG1FN: TRANS AURORAL SCATTER?

Let us be the first to coin a new term. Trans Auroral Scatter. Now let us be the first to attempt to

A more enthusiastic trio you wouldn't find on 50 megs. Even they will have to think deep to remember where this photo was taken. From left to right, front row only: Ray, K6PPI, Marv, K6LRQ, Hal, K6OGX, all Fresno, all 50 megs.

explain it! KG1FN is on an island, except it isn't a real island. It's a hunk of ever lovin' blue green ice north of Alaska floating around in the Arctic Sea. He is an avid VHF enthusiast with a 6N2 on both bands. He has worked into 7 states during the past six weeks with what we think is amazing regularity. In fact it is downright uncanny KG1FN, who is located almost in Siberia and due north of KL7AUV by some 650 miles could work WØ's and W7's over paths of 2000-3000 miles almost every night from 2300-0300 CST, in the middle of our summer! Yet he did it and may still be doing it! And KL7AUV, who operates his converters several hours daily, has yet to hear a single signal from the states all summer. KL7AUV has even been keeping skeds with W7RT all summer and has heard nothing except KG1FN, who Jack worked at 0903 Alaska time on July 26. At that time KG1FN was located at 71° 18' north and 133° 38' west in a sea of floating ice which was rapidly becoming less floating by the day. It is pretty safe to bet that KG1FN's ice island won't be doing much drifting for awhile. He will probably be close to where Jack worked him, later this fall when the KL7s start rolling through stateside once again. KG1FN is very able (mostly a cw man on 50.04, 50.1 and 50.16 I am told) and he listens and transmits a good deal. Other then KL7AUV, KG1FN has worked DX (meaning anybody) only after 2300 CST. He has worked into Wisconsin, Montana, North and South Dakota, Minnesota, Illinois and Alaska that we know of, plus VE6UV who says he works KG1FN almost nightly after 2315 MST. VE6UV says KG1FN's signals usually start very weak, with a lot of flutter, build up, fluttering all the time, then drops back into the noise. Sometimes he is in 15 minutes, sometimes three hours, usually calling cw DX. They go to phone when the signals are strong. This sounds a good deal like Trans Equatorial scatter signals I have heard and what others report. I am not suggesting anything, except (food for thought) why not Trans Auroral Scatter? We know we can work off of Aurora as high as 144 mc by rebounding from the aurora surface (and to send a signal into aurora and bounce it back towards the direction from which it came, takes pretty dense ionization). Why then couldn't a station north of the general Aurora zone work through the aurora much like TE scatter works through an expanded F2 layer? That very briefly is my case (brief because I don't believe many readers are propagation minded anyhow, they are interested in working the DX, not how the DX signal got where it did).

MY POINTS FOR THE ARGUMENT

1) KG1FN has worked into those states where Auroral displays are most often seen and where 50 and 144 mc aurora work is very common.
2) The time of the work(2300-0300).
3) The heavy flutter rate of the signals.

All of this should be born up when we start our fall and next spring auroral displays. Since some of the 50 mc paths are nearly 3000 miles long, why not the same thing

We may never work him on the coast this fall, but it is nice to see what the eastern 50 meg DX men have been chasing during the winter months in the past three years. This is SM7ZN, of 50 mc fame. 29 states worked from Sweden on 50 mc!

on 144? Or in other words, we know we can rebound 144 mc away from the aurora and by all laws of ionospheric physics, this should take more ionization (heavier display) then it would to arch a 144 mc signal over and through (here is the trans term) the same display. KG1FN is ready, who will be the first to work him on 144? Finally, is KG1 a country or not? Is a hunk of ice a country? It has to be something (per the ARRL country DXCC classifications) does it count as Greenland?

K6LLQ/5

Ronnie used to be on the air from Oakland when we last heard from him. Now he reports he is working for Sandia Corp., after something like a decade in the Navy, and thinks New Mexico ought to be put on the 50-144 and 220 mc maps all over the country. Ron was top side of Sacramento peak (where they observe sun spots for the National Bureau of Standards) during the Sept. VHF QSO party with gear perking on all three of the lower VHF bands. His mtn top site is 9500 ft above sea level and thinks it has tremendous possibilities for future work on 220 and 144. He is open for skeds on two (154.125) and 220 (221.5). Look for him on six (measured at 50.08533). He asks about Spanish stuff on 50.400. This I am told is the audio portion of a Mexican television repeater system which beams XEW-TV, Mexico City, to a more southern Mexico city. Ron is looking for a 455 kc panadaptor. Anyone have a spare?

PERSEIDS: AUG 10-14

The one period each year when two meter enthusiasts get out their BC221's and make with the Charley William chasing new states 1400 miles distant. W6NLZ says his schedules with WØQDH in Kansas proved to be a big nothing. He heard him send S2 but never heard the call sequence, Mel, W6WSQ, West Covina, perhaps made the best use of this years Perseids shower. He worked WØIC in Denver for his first Colorado, on August 12. On August 13 he made the first California to Idaho two meter contact, with bursts up to 25 seconds long between 0030 and 0130. This contact, with W7CJM was vertical to horizontal polorazation. W6WSQ total on 144 mc, 14 states.

KH6UK NO MORE

Tommy left the 50th state to head back to one of the original 13 on Sept. 5. Once more he will become W2UK. He was in the islands on a special contract basis for RCA. A native of New Jersey, he will be reactivated there we are told. To cover all of the spectacular work he has done in his three year stay in Hawaii would be an almost impossible chore. His CW signals have been a joy to hundreds of eastern 50 mc men who had never heard the islands before. His 50 mc phone signals were consistent into Australia and South America, the west coast and Japan. We worked him on back scatter from New Zealand and back scatter from Alaska. Whenever the band was open, Tommy was on. His 144 and 220 mc work with John Chambers W6NLZ, will probably stand for years. To the best knowledge available, no one is going to try to fill his shoes in KH6 land.

WHO WAS KIDDING

No, we weren't kidding last month when we asked that you go through your VHF log for the calls of as many VHF contacts you have time to copy down on a piece of paper. They will serve two purposes. Each call will get a copy of WRA compliments of you, and if you submit five names which respond to WRA with a one year sub, you get six months tacked on to your sub.. FREE! This is all a neat scheme to increase the WRA circulation to VHF minded hams all over the country. With this particular issue containing George's fine work (The W6OKR 250 watt rig), every VHF man in the country will want a copy. Send your list of calls to K6EDX, 820 Tully Rd., Modesto. For more details see the July WRA.

ROYAL ORDER OF HOOT OWLS

(Copyrighted 1955-W7YJE)

R. O. H. O. #1

Have you worked 'W7OUN' on 15, 20, 6 or 2 meters? If you have, you have worked a very active 'bootlegger. Help stamp out the ant who has been active in Seattle by giving any details to your local FCC office. His phone signal is on all bands, and he works 80 and 40 cw. The call 'W7OUN' has never been issued as confirmed by the Seattle FCC office.

With the 'Hootowl' gang we wish to welcome WA6CEX, WA6GMD, WA6CQW, K6VBI, W6TQQ and an old friend W6-MZD into the feathery rituals of the Royal Order of Hootowls. Keep them 'hootin' gang.

Many of the gang have written asking about our 'nomination awards'. In answer to those who are active on the 50 mc midnight 'Hootowl' QSO's, we do give five (5) nomination awards dating from June Hootowl picnic to June Hootowl picnic, so get busy as the sixth annual picnic is only 'Fathers Day' away. For any of the gang who may win one of the five awards and cannot attend our R.O.H.O. picnic, your award will be mailed to you.

We are getting mail on our Hootowl page in this magazine and we want to thank all of the gang for their comments and photos. Keep them coming. Also remember to let the Hootowl gang who do not read WRA that they are entitled to a special Hootowl subscription. Write W7YJE, (membership only)

Had a FB eyeball QSO with one of our old feathery friends Hootowl no. 21 Ken, W7INX, who many a six meter DX man has worked from Oregon way.

The photos are from the Hootowl scrapbook, the antenna and tower of our dear old DX buddy W6NIT (ROHO no. 107). The big sailer is one of my own design, 36 inch hull and radio controlled on 2 meters. Speaking of RC, Ken K7DNF is working on a five foot Chris Craft, and it will soon be on its trial runs.

In Seattle we have just finished the annual Seafair and Gold Cup unlimited hydro races. The eight huge parades were controlled by 6 meter hams. The Evergreen VHF Society sponsored the radio equipment under the direction of Worner, W7WTG.

Remember, those of you on 6 meters can become a member of R.O.H.O. by being in a one hour QSO on 6 and working a member station according to the rules as set forth by this soiciety. On 50 mc at 2400 Saturday is the hour. Call CQ Hootowls.

Remember gang get those nominations in early, and please follow all the rules as set forth on your rules copy. If you need a new one or certificate write. Don't forget to send us some 'scuttlebutt' along with photo's, and for the finest in ham reading use your Hootowl subscription for a year of armchair hooting with the gang in this magazine. Write W7YJE for WRA Hootowl details.

CRACKER BARREL CQ

C.J. Schauers W6QLV/F7FE

The one man I have never stopped admiring was Will Rogers. His sage wisdom and wit will live on with us forever. What I liked about Will's remarks (though many of them were barbed), was his sincere approach to the problems of the little guy — not once did he forget him.

About the only time he admitted to a little 'spoofing' was when he did a little horse-trading — but otherwise, he was honest, up-right and God Fearing, and one who helped so many people with so many problems.

The instant Will ran into a situation that was unfair, dishonest, unpatriotic, or just downright 'not right', he'd land with both feet and attempt to do something.

With tongue-in-cheek he would make an offender feel like crawling into the nearest hole — and this he did many times.

Putting Congress 'in place' with a rib tickler pleased him to the core — and the many people who read his daily column. But sometimes he rushed a few 'windmills' and got 'knocked' down for his effort — did he stay there? Yer, dern tootin' he didn't! Maybe he didn't stop those windmills but he sure as heck dented a few of 'em and threw 'em out of line so far that they eventually just stopped turning or 'got back in line' properly.

As a 'one man crusade' for good and consideration for the little guy, few ever came near topping him.

What's this all got to do with ham radio? Well, let me tell you something. Those hams who have rushed and are rushing windmills and willing to stick their necks out for the good of the most wonderful hobby in the world — amateur radio — are and were in the minority. Some of them quit early in the 'game' in disgust at the apathy of the average ham in looking out after his own interests. Some of us continue to 'tilt' in areas where we can do the most good — some of our efforts are meager (there's little doubt of this) but we're still tilting!

Maybe we are 'nuts' (to some people) for wanting to sincerely help out fellow amateurs with their technical problems; conserving our ham frequencies; inducing more novices to work hard for their general licenses; encouraging maximum participation in League activities (it is the only one we have remember) —— ARRL note please!; donating equipment to needy hams at home and overseas; encouraging a free ham press; fostering better International ham relations and general goodwill; reciprocal licensing; and pushing the Public Service aspect of our ham existance, ad inf.

But to stick up for what is right takes more than attendance at radio club meetings. It takes individual action in the form of letters, magazine articles, telephone calls, personal assistance and over-the-air discussions with other U.S. hams. And one more thing — it takes support for a ham press that has the perogative to criticize (constructively) any representative action. No one can champion the rights of the radio amateur if he (or it) does not permit our American right to openly criticize him (or its) procedures and policies.

Now a final point — it's fine to be able to criticize constructively, but for goodness sakes, in the process recommend something concrete toward final solution!

Remember: communication to be effective cannot be one sided. Let's not take our ham priveleges for granted — like freedom they can be lost — make no mistake about this.

See you on down the trail! 72-73-75
Chuck

☆ ☆ ☆

. . . WITH THE YOUNG LADIES

JEAN Kincheloe K6OQD
6625 N. Brightview Dr.
Glendora, Calif.

I'm somewhat at a loss as to where to start this month. I guess as good a place as any would be to give the officers of the coming year for YLRL. President-Gladys, W6DXI; Vice President-Lillian, W5EGD; Secretary-Connie K6EXQ; Treasurer-Jean, K6OQD. They will take office January 1, 1960. Good luck to them all; me too.

Everything I have heard this month has to do with 6 land again. Maybe I'll be able to get on 10,15 or 20 meter YL nets this fall and pick up news from elsewhere around the country.

Ida, W6BIS, is off for a two month vacation up Oregon way. Harryette, W6QGX, and family are just back from a trip up to the central part of California. Vada, W6CEE, is back from a trip to South Dakota where she attended her seven sisters' reunion. She and Al spent a week in Colorado and went to the dogs (races that is). Claire, K6ZCR, has moved to Palo Alto and has been checking in on the 40 meter Round Table on cw. Good to hear from you Claire only don't go so fast! We're not all brass pounders like you are, hi!

Congratulations to Agnes, who has passed her general and is waiting for that ticket with the WA6 on it. Ruby, W6WRT, has received her WAYL award from the South Africa Women's Radio Club. Nice going, gal. Ruby and Harryette have been keeping regular schedules on 40 meter cw. Will wonders never cease ?? I haven't figured out yet whether the reason behind all of this cw practice is to work DX, become brass pounders or what; but I have a sneaky idea it has something to do with the cw sections of the YL Anniversary Party and the YL-OM Contest.

I went to the first meeting of the new year of the Los Angeles YL Club. I was very glad to see several new faces there; W6YIB, Eleanor; WA6CKR, Mickey; W6WBH, Laurie; and KH6COD, Madge, who is over here going to college. Also present was Esther, W6BDE, President of the BAYLARC up San Francisco way. It was great fun meeting Esther and I hope to get a chance to meet her again if I get up her way next year. Hope to see the other gals at more meetings in the future.

Best of luck to Rosemary, K6ACF, and OM Bob who are attending a class in Russian. Brave people! All our best wishes too to Jenny, K6JCL, on her trip to the hospital. By the time this is being read, we all hope that she is up and bouncing around again.

After a remark I made about QSLing a couple of months ago I think I might do well to put in a few more words on the subject. I know that there are a lot of people who 'don't believe in QSLing' but I have never figured out why they feel that way. Now, I'm not speaking of foreign stations who do have serious problems with QSLing. Let's face it, a rare DX station gets on the air and immediately swamped by W and K stations calling and all wanting QSL cards. This can create a serious financial problem for some of those boys. No, I'm talking about hams stateside. I have always heard it said that the QSL card was the final courtesy of the good QSO, but apparently this is a minority opinion. You think not? Well, look at the figures. I have sent QSL cards to 692 OMs and have received 450 in return. That is only a 65%

Continued on page 41

CONVERTING 12 VOLT DYNAMOTORS TO 6 VOLTS

Ken Pierce W6SLQ
2627 E. La Paloma Ave.
Anaheim, Calif.

Now that the mobile season is about over, many fellows would like to replace that defunct dynamotor that just didn't take it. This little idea may be a help to those unlucky fellows as it was to me. My six volt dynamotor gave up the ghost with one last gasp of smoke, and all I could find at a reasonable figure was a twelve volt job with the proper output voltage, so here is my solution to that problem.

First dismantle the dynamotor, remove end bells, bearing housings and armature from the frame. Inside the frame are two fields that are connected in series. Reconnect these fields so that they are parallel. Now that that dirty and uninteresting work is completed we are ready for the next dirty and uninteresting operation. The armature modification.

To stop with the field modification would give a dynamotor that gives slightly less than half the output voltage of the original unit and the same current. What is wanted is full voltage and current so let's not talk, let's get to work.

The armature modification is not difficult but requires a little more patience and a soldering iron, an ohm-meter and two straight edges (now don't push the panic button it's easy, just hang on.) The straight edges can be rulers or hack-saw blades on edge.

Now, remove the string and/or paper just back of the low-voltage commutator segments. (The larger segment end of the armature is the low-voltage end.) Removing these wrappings reveals wires coming from the windings. Careful inspection will reveal that there are three wires to each segment. The wires are stacked one on top of the other and fortunately we are only concerned with the top one of these wires on each segment. Here is where we use the soldering iron and patience. Heat the top of one segment and with a sharp probe pry gently, now be careful and don't break that wire as we reuse it in just a minute. Now the ohm meter on its lowest scale. Read the resistance from the wire that you just removed to the segment each side of the one from which you just removed it. You will find that one side gives a higher reading. That is the direction that you will be moving each top wire in each segment. Now to get with it, in the direction of the highest resistance reading, remove the top wire from the next segment. With the soldering iron heat the segment then with the sharp probe pry up gently on the top wire (gently, remember?) Now that you have the wire from the number two segment move it out of the way and take the wire from the number one segment and solder it into the number two segment. Now we do the same with the number three segment, heat with iron and gently pry out the top wire, take the wire from the number two segment and solder into the number three segment. Continue this opera-

Continued on page 43

DAY OF RECKONING

Continued from page 19

yond our present capabilities, such as long distance paths via planet bounce or meteor scatter and other celestial body reflections used as passive reflectors.

Amateurs could develop pulse time or width modulation systems to replace the common types of modulation systems used today. We could also replace the common word of mouth or the morse code with digital information transmission. The amateurs could develop antenna systems which were heretofore restricted to being impractcicable because of their physical sizes. They would have fantastic gain figures and by comparison would make our present day dipoles look like underground sewer pipes as far as being a good radiator.

We need a stimulation to amateur radio today by adhering to the definations given to us by international laws one of "self training, intercommunication and technical investigations carried on by — duly authorized persons interested in radio techniques solely with a personal aim and without pecuniary interest". If these things are not done, then I may surely predict that each and every amateur will find himself with obsolete gear scanning obsolete ham bands in the very near future.

For he will have been left behind like a commuter who was too late at the gate to catch the train.

Amateur organizations and equipment manufacturers must all strive for great futurism as it will be of mutual benefit for all, in this new age of miracles. Although even in the professional fields of electronics, the industry has not yet met all the challenges put to it by the space age. The hard truth is, electronics more often then not is the limiting factor in aircraft and spacecraft design. Propulsion advances, such as they are, already have outstripped man's ability to control power at his disposal. Electronics must match the man to the machine — and so far it has not succeeded. Not in space craft, aircraft, or even in groundcraft, as demonstrated by America's highway jams.

I respectfully submit a list of solutions to the forementioned problems in developing new communication techniques and frequencies. They are listed in the following order of Precedence:

1—Set up a technical committee composed of top notch microwave experts well versed in the latest concepts of space communication. Their coordination could be via written reports and recomendations if personal attendance was impossible. They should promulgate information from these findings and studies through amateur publications. (magazine editors take note)

2—Alert electronic manufacturers of our desires and requirements in this new field. This could be done by publishing microwave articles in leading magazines on a serious and technical level.

3—The immediate occupancy of the microwaves by the use of war surplus radar equimment.

(a) Use the simplest means for communication, such as velocity modulated klystrons and the like.

(b) Obtain new frequency allocations for holders of technican class licenses. They were originally formed for expermental and developmental work anyway. The intention was not to be a special class of communicator who obtains all the benefits of the advanced or the general class ticket holder without taking the extra code examination requirements.

4—Manufacturers could begin designing low cost microwaves products such as the use of modern die casting methods. Even metalized die cast plastics could be used in lieu of expensive machined metals.

5—Develop new concepts for the transmission of information like voice to digital translators. In the same vein replace the out-dated morse code with a digital code using equal pulse lengths. Use tape recordings to allow for the development of burst transmissions.

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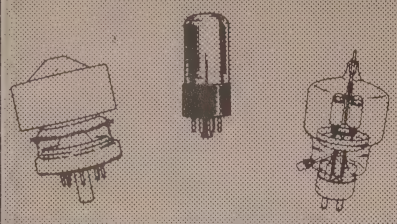

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The potent signals of the well known station G2DC, emanate from this location in Ringwood, Hampshire, England Jack runs 150 watts to a G4ZU beam .

FB8XX, QRT for amateur contacts since April, is again active on the ham bands. Watch for him Saturdays and Sundays between 1430 and 1630 GMT. HB9J got him on am phone 21145 kc.

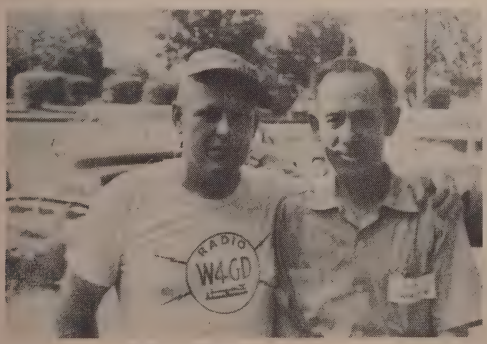
G5HB now signs ZB1HB in Malta.

Via W7PHO and ZL3DX we learn that a BC station is to be installed on Tonga. Applications for personnel are now being accepted with possibilities that one may be a ham to put VR5 on the ham bands.

ZS2MI, Marion Island, is scheduled to be on again looking for W/K QSO's on 14180 phone. Starts at 1230 GMT.

The radio club of Sofia has expelled Sibi for illegally signing such calls as LZ1DX, ZA1KAD, TA1SS, 9B3AA/ZA etc.

YASME III Expedition: Danny has now located a suitable boat in Clearwater, Florida. All efforts will be made to secure this boat. Some 3000 letters, and copies of the new Yasme Newsletter should be in the hands of former contributors by now. It is hoped the Newsletter will be a permanent fixture now and subscribers will be kept up to date on all moves of the expedition plus detailed stories by Danny.



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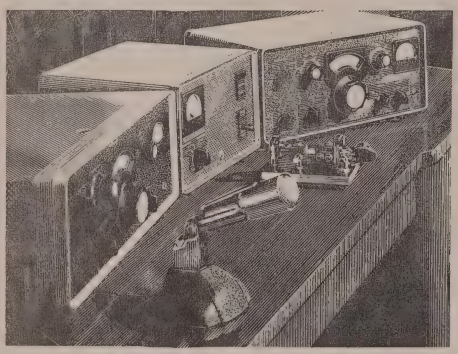

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Sidelights on Sideband

from page 22

than the unwanted. If the suppression is 50 dbs, the ratio is 100,000 times!

LET'S LOOK AT OUR RECEIVERS

Leaving it at that for a moment let us have a look at our receivers. Suppose our receiver has no AVC and we adjust our RF gain control to suitably receive a SSB signal that has 40 dbs suppression of the unwanted sideband. Now suppose our receiver is fitted with an excellent filter and our friend at the other end switches sidebands. As his other sideband is 10,000 times down the chances are that he will disappear. But if we now fit the receiver with AGC and turn up the RF gain control it will be obvious that the action of the AGC will considerably change the ratio of wanted to unwanted as far as the ear is concerned. This ratio will change according to (a) strength of the signal. (b) the deliberate delay built into the AGC system. (c) the non-linear slope of the AGC system. And (d) in the practical receiver, the shortcomings of the IF filter. The moral that appears as a result of inspection of (a) through to (d) is that one should only give audible checks with the AGC switched off and even then give them with a pinch of salt.

THE S METER

In the case of the receiver equipped with an S meter most of the above clauses still apply. The non-linear slope in particular. Quite a number of receiver S meters are incorrect near the high end of the scale. You may prove this to your own satisfaction by measuring the suppression of your own exciter, first with only small input to the receiver and then with considerably more signal input. I am sure that quite a number of owners of supposedly good receivers are going to get something of a surprise here. In the matter of filters, I am quite sure that the average receiver manufacturer never envisaged their IF filters being used as a measuring instrument. The given checks will, of course, be just as good as the IF filter makes them.

WHO ME!

Then there is the human element. One person I know always derates the suppression of phasing rigs. When told that the rig he had reported on was filter, not phasing, the suppression report, on a second check, had magically improved!

WOBBULATORS

Unless it is equipped with logarithmic amplifiers the wobbulator used in conjunction with an oscilloscope as a means of facilitating filter alignment is ordinarily unsatisfactory. To show skirts or lobes say 40 dbs down (10,000 times down remember) the trace would have to be infinitely thin and the scope face several feet in diameter!

POWER DBs and VOLTAGE DBS

Then we come to the confusion existing over dbs as applied to power and dbs as applied to current or voltage. If you double the voltage in say the output of a rig you also - perhaps unknowingly - double the current and this means that you have increased the power by four times, not two, so the actual increase in power is 6 dbs. It will be appreciated that as power is equal to I^2R the actual resistance or impedance of the circuit also has a major bearing on matters. Therefore in calculating the gain of an amplifier it is necessary to know and take into account both the input and output impedances.

Summing up, in general, S meter readings should be used only as a guide to indicate whether suppression is good or bad, better than Bill's or worse than Bill's.

Thinking about it, might it not be a good idea to divide our S meters into two sections one labelled Good and the other Bad! Might save a lot of arguments, particularly if the Bad portion was microscopically small. What Say?

****

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50 MEG FINALS:

Elsewhere in this issue you will find a very fine description of the W6OKR 50 megacycle rig. George has been an outstanding signal in the Bay Area for several years now, all of it directly attributable to his FB 250 watt rigs (well . . . now that you mention his 125 foot high five element beam, maybe it helps JUST A LITTLE!) Actually, with the signal George has always put out one would expect the band to be clobbered by his audio all over our receivers. But this just has never been the case . . . because George has always taken a little extra time to be sure the audio is clean, and the rig itself clean of garbage.

Now if you have a yen for high power on six but think you would rather build the modulator and driver portions, and let "George build the final" . . . may I suggest that you take a look at the WA6ADM final for these rigs. An exact copy of the OKR Final, it is a wonder to behold for simplicity of operation, convience and so on. I have them in stock now at Bill's and if you want to go higher power on six . . . drop on out to Bill's Electronics, 130 E. First. Livermore. Always lots of good conversation . . . a huge room full of parts, and the rig is going whenever the store is open (like 7 AM 'til 6 PM Monday thru Saturday, and Sunday afternoon). Gear on 160 thru 2 meters . . . come out and operate awhile . . . or take a listen for me on 50 meas . . . with my own W6OKR final. They are really something . . . and we have then in stock . .. custom. built.

Dutch . . WA6ADM HI7-5888

BILL'S Electronics
130 E. First Livermore, Calif.
"Just off the Square"

ZERO BEAT from page 23

hotel lawn, and ARRL banner strung across the street between the buildings flopping in the breeze.

One of the activities at the Pasadena convention was the tour over to the San Gabriel Valley Club Microlock Tracking Station, set up in the L.A. County Sheriff station. Bob Legg W6QYY explained the working of the set up which is used to record doppler from the satellite. Because of personnel shortage, which is always a club problem, the station only operates for the first three orbits. The station has some classy equipment now. The first recorder they used ran 10,000 feet of tape the first two days. They now have a new one donated by Ampex.

Another interesting tour was to the Huntington Library, something which many of us probably would never have taken the time to see on our own. Here we saw the $80,000 'Blue Boy' painting and others. These tours are mighty fine for out-of-towners.

Some of the old timers seen who never look any older, Don Wallace W6AM who never misses a convention as far as I can remember, Howard Seefred W6EA, then there were the two old DX men, W6ENV Andy, and Herb W6QD, who are now working together as sales rep for Gonset and other lines. W6JQB was in the lobby shaking hands with all. With fewer hairs on his head than I remember him some twenty years ago in Santa Ana. Anyone know where the next convention will be held?

Before closing I would like to mention we have a new R.I. in SD, his name is John W. Crews, W4AIW, a real nice fellow from Savannah, Georgia. Assisting him in the office is Vera Bloodgood. The SD FCC office is now located in new quarters at 1245 7th St. K4BLA/6 wants it known he is in the Marines and located at the hobby shop bldg 1353 ext. 1969 Camp Pendleton and is interested in 1200mcs.

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. . . with the Young Ladies

from page 30

return and I consider that pretty poor. What's the matter with you fellows? Why don't you QSL? Those that say you don't believe in it, why not; I'm curious. A lot of you belong to clubs that issue certificates on the basis of QSL cards. How are we going to get those certificates if you don't QSL? I'm not a certificate hound but if I work stations whose cards would qualify me for a certificate then I would like to have it. So how about it fellows? If you don't have any QSL cards, use a postcard, particularly when someone makes a specific request for confirmation for some certificate.

Now to the gals QSL record. I've sent out 250 QSL cards to YLs and have received 221, an 88.7% return. I separated them from the OMs because you might say that YLs QSL better to another YL than they do to an OM. This might be; I have no way of knowing. But tell me this, do the OMs QSL better to OMs?

Incidentally, for those who don't have a dictionary or are too lazy to look it up, peripatetic is NOT a nasty word! In the context in which it was used in this column last month, it had reference to a person's traveling around a good bit, particularly in line with their work. So there too!

One last note which I address to a particular ham in Pasadena. I hold a General Class license. The only reason I cannot get up on the Idiots' Net frequency is because at present my beam won't take a load up that high in the band. This is a condition which will be remedied as soon as the OM is able to climb the tower and change the tuning of the beam. Right now Bill's right hand is in a cast due to a broken metacarpus. I ducked and he hit the wall instead, hi! You wouldn't believe me if I told the true story of how he broke it, so why bother. On this happy note I leave you all.

****

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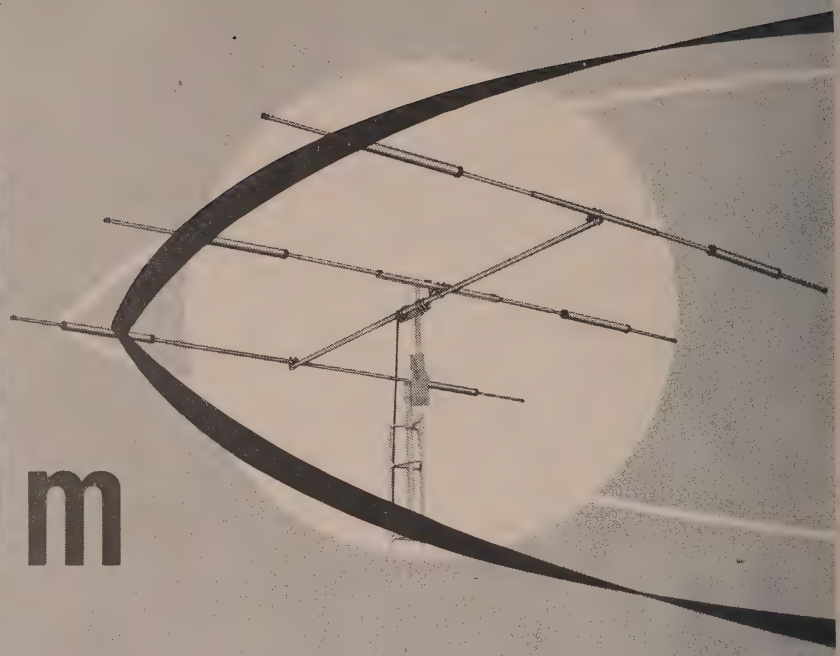

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DYNAMOTOR from page 31

tion until all of the segments have been visited in this same way. Make sure that the wires are well soldered to the segments also make sure that there is no solder shorting the adjacent segments together.

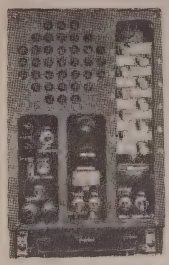
If, and that is a big word here, the wires are well soldered it will not be necessary to re-wrap the string around the low voltage end from where it was removed. However I recommend it.

Now we are ready to use the straight edges. This operation is not absolutely necessary but will reduce vibration and give the dynamotor a longer life span. Set the straight edges up so that the ends of the shaft rests on them and the armature is free to roll. Now see if the armature stops with the same segments up each time. If so you have a heavy spot at the bottom. Melt a small amount of solder onto the segment on top, this will counter balance the heavy one on the bottom. Here is where the refinements come into the picture. If you have some varnish it will be a good idea to varnish the wiring job.

Reassemble your dynamotor and install it in your rig, you are ready to enjoy the fruits of your labor. You, if you have followed closely, will get the same voltage from a primary voltage of six volts as the dynamotor originally gave from a primary source of twelve volts and at the same current drain. Secondary mills that is.

I have never found a twelve volt dynamotor that could not be converted to six but have never found a twentyfour volt job that could be converted to twelve. The famous or infamous, as the case may be. PE 101C requires this same modification on both ends to yield a six and twelve volt dynamotor instead of the original twelve and twenty four volt job.

****



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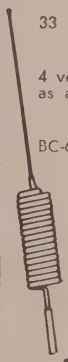

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$30. Hy-Gain 2 el Mini-Tribander antenna or will swap for 14AV vertical or equal. Harry Blomquist, K6JSS, 12430 Ted Ave. Saratoga; ALpine 2-6229.

FOR SALE: Morrow Station, MB-560-A xmtr, Falcon rcvr with BCT, RTS-600 AC power supply and speaker, all cables, mounting gear for mobile, T-17 mike, Master Mobile No. 900 all band antenna coil and whip, $400. Free delivery west of Rockies. Duffy Taylor, W7BX, 2504 Borst Ave. Centralia, Washington.

FOR SALE: Complete station. Buy all or separate, at low prices. DX-100, NC-98 with speaker, Johnson low pass filter, Johnson match box, Heathkit Q-Multiplier, 3 element 10 meter Hi-Gain beam, Home Brew 3 element G4ZU Tri-Bander, 30 ft. slip up tower, CDR Rotator, 70 ft. RG-59U coax, Monimatch SWR bridge, station clock and pair of B&W #3975 balun coils. If you are interested in any of this equipment call or write Bob Smith, K6OZO, 1078 S. Ogden Dr., Los Angeles, Calif. at WE 4-8469 or WE 9-5114.

FOR SALE: BC610F with BC614F speech amp., army T.M., and conversion data for use as a SSB linear amplifier. $200. K6OAE, Glen Chaffin, 17006 California Ave, Bellflower. TOrrey 7-8812.

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WANTED: The Amateur Radio Club of Baldwin Park High School needs radio equipment, old receivers, TV sets, working or not, especially parts and diagrams. What have you. Will pick up all local available equipment. Why not clean out your shack and help us out. Write to: Baldwin Park High School, 3900 N. Puente Blvd. Baldwin Park, Calif. c/o Amateur Radio Club.

FOR SALE: Large modulator- pair 833A tubes driven by 211 cathode followers and LS691 modulation transformer, reactor, coupling condensers, large clipper, speech amplifier with dual power supply and 6B4G driver tubes and associated power supplies. Will deliver 2 kilowatts of undistorted audio. Call after 6 pm. STate 6-5978. Ray Halkney, W6BUD.

30 watt trans. with tunable cavity 400mc to 1400mc $12. 2 meter Gonset Comm. IIB rotator, 10 element beam $160. Model 26 teletype, table, 12 rolls of paper $75. TG-34A code keyer, 6 rolls tape $20. New 22 element Cushcraft 420mc beam, 60 feet leadin $10. RCA Eng. tube manuals volumes 1 to 8 $2. 29 inch reflector dish $3. Thordarson 500w trans. 2400vct $10. V.T.C. Universal modulation trans. 55w $5. Peerless Universal modulation trans. 20w $2. Heathkit BE-3 "A" battery eliminator $10. 80 meter ARC5 trans. 40 meter ARC5 doubling to 20 meters. and rack $5. Picket slide rule model 803 ES $12. Electro-Voice TV distribution amplifier 4 outlets $10. McElroy ink recorder head PRD-900-42 $8. T-17 army mike $1. Standard coil VHF tuner $5. Standard coil UHF VHF tuner $6. RCA recorder motor with 78 rpm gear box $2.50. 500 mmfd 5000v vacuum condenser $1. New Mallory 3 circuit inductuner $3. Veeder counter $1. (AXT-2) 30w TV transmitter 420mc new $10. APX-6 with 1296mc cavities $5. Tubes: Four 1625 $1. Ten 1626 $1. Ten 446A lighthouse $1. Four 826 VHF $1. Seven 8025 UHF $1. Ten VR150 $2.50. Seven 954 $1. 931A photo multiplier $2.50. Two 902PI CRT and mu-metal shields $2. 1808PI and mu-metal shield CRT $1. Phone ST 4-2185, after 6 pm.

FOR SALE: Viking I (TVI'd) and Viking VFO, Johnson 6N2 (new F/W), Viking Ranger (F/W) all modifications, Harvey Wells TBS-50C transmitter, Citizen-Band 10 meter trans-ceiver (Black-Widow), RME-435A receiver, Central Electronics 20A (F/W) with BC-455 VFO and VOM control, Heathkit Apache, National VFO 62, Black Widow deluxe 6 meter transceiver Mosley Tri-Band beam, Heathkit AT-1 transmitter, RME 69A receiver, Hallicrafter S-40B and S-20R receivers, and self supporting tower. All items excellent condition. Best offer. WANT: 75A4 receiver (late model), and lever action deer rifle. Terry Downey, W6PZN. 13630 Kismet, Sylmor, California. EMpire 7-6564.

SACRIFICE: Johnson Ranger, factory wired, push to talk, includes D104 mike, coax, antenna relay, cost $382. Best offer over $195. Prefer local sale. Gonset Bow-Tie, 20 meters and 50 ft coax $10. Dickens 4-1736. 6803 Amestoy Ave. Van Nuys, Calif.

NO TIME FOR MOBILE: New Heathkit transmitter, receiver, and transistor power supply. Wired and tested by electronics engineer. $70. Rafred All-band antenna with indicator meter and mount. Switches bands electrically from the dash. Includes cables and connectors for complete installation. Best offer over $300 or trade for late Valiant or 32V3. W6RUP, Box 414 Fullerton, Calif.

SELLING OUT COMPLETE SHACK, Moving. Complete Television station, RCA camera with 3" view finder, tripod, dolly, 1-12" rack mounted monitor 1-10" receiver and monitor, 7" rack mounted receiver, 420 converter with push-pull 6AMU R-F stage. Mallory, in case. 2 beams 12 element screen and 16 ele. 40 ft mast. Complete 6 ft rack mounted transmitter. 6CL6, osc. 6CL6 trip. 6CL6 buffer, 6360 buffer amp. 6252 trip. 5894 PA. All metered real nice looking rig, works beautiful. 65% efficent. Speech amp. and all power supplies, everything rack mounted. 2" scope also in rack flat to 1.5mc. Best offer over $200. Plus. Bendix BC639 rcvr with P.S. rack mounted. Commercially, 98-155mcs, AM or FM $50. complete. 220mc xtal converter 2 RF stages $15. very sens. 108 xtal conv. $7. push pull RF all in 4.5 rack cabinet. Heath Grid dipper $14. good cond. All kinds of VHF tubes 5894's $8. 6252's $7.50. 6360's $2. All new or nearly new, guar. 4X150A $4.50 new. Heath scope $55. VTVM Jackson good cond. $15. Gonset Communicator II $115. good cond. All kinds of parts and odds and ends cheap. Must sell everything. Bob Brown, W6WPD, CH 7-7911. 10657 Penrose St. Sun Valley, Calif.

FOR SALE: Complete Gonset Mobile; Gonset G66B, G-77A, power supply and modulator, mobile master all band antenna, PTT mike, cables, mounting hardware, etc. The works-like new-$400. Deane M. Ames, K6UIN, 4823 Atoll Ave. Sherman oaks, Calif. STate 4-4278.

FOR SALE: Globe Champion 300A, mint condition, used 25 hours as linear, $325. 20A with QT-1, BC-458 VFO 160-10 meters with deluxe C.E. case like new $225. PMR-7 receiver with PSR-612 and S Meter $125. 6 meter men note: Gonset Commander II-C 60 watt mobile & fix transmitter 160-6 meter with 12 volt dynamotor better than new $85. National C.R.U. modulation monitor $15. Panoramic Radio Corp Panadaptor 455kc I.F. $45. Shure "Sonodyne" dynamic mike never used $17.50. Master Matcher 12 volt new still in ctn. $19. Collins P.T.O., perfect for SSB, VFO, 2.45 3.45mc in 10 turns of shaft. Plus or minus 100 cps sealed unit $50. Two coax relays; 1-115v 60 cps for commercial use 1-12 volt cps mobile both new in factory ctns. $8. each. Misc. parts, tubes, meters etc. Would accept small commercial rig in trade. Make offer. Thanks. Don Johnson K5HIL/6, 249 Lark St. Oxnard, Calif. HU 6-7420.

FOR SALE: B & W grid dip osc. $30. W6GMC. EL 8-0831.

ATTENTION: High power enthusiasts. It has come to my attention that one of the chief factors holding many hams back from putting on higher power rigs is the lack of readily available tubes, I have a fair supply of the following tubes which I would like to swap for various goods. Tubes (sorry, no sockets) in stock at this time (all guaranteed): 4X150, 4X150A, 4X150B, 4X250B, 4CX250, 4-1000, and 4CX300. If you have any of the following, here is what I can use and in the following quanities: Hammarlund Super Pro receiver (s): BC-779 (covering to 20 megs) and model which covers to 40 megs. Need power supplies to go with receivers. Should be in good working order. Need two such receivers. Power supply components, transformers, chokes, filters for 1500v at 250ma and 3000v-4000v at 500ma supplies. Need two 80 ft crank up towers in any non-rusted, non bent condition. Filter King and Tapetone 6-2 and 1-¼ meter converters. High power modulator components (what have you?) RG-17U coaxial cable. Am open to inquiries, but first come first serve. We won't turn down cash but prefer to see the cold steel of your gear. VHF Traders, 820 Tully Road, Modesto, Calif.

FOR SALE OR TRADE: One RCA transmitter, table top type MI-7821 frequency range 30-41 mc amplitude modulation. Now tuned in 10 meter band, complete with speech amplifier and modulator 50 watts output. Also BC221-M frequency meter 125 - 20,000kc. Will trade for 2 or 6 meter transmitter.receiver or sell. E.M. Hensley, K6HRE. 1181 McClellan Dr. Los Angeles 49, Calif. GRanite 3-4465. Office-UPton 0-7517.

WANTED: 75A2 or 75A3. State serial number, condition, accessories and best price in first communication. J.M. Bell K6HLL, 3647 N. Fair Oaks, Altadena, Calif. ST 8-3142.

TOWER: 38 feet, triangular, sectional. only $35. Call Jerry, K6GAI. ED 2-4901.

QSL data on a RUBBER STAMP. Send picture post cards of your community when QSL.. Victor Rubber Stamp Company. 1510 S. Myrtle Ave., Monrovia, Calif. ELliott 8-2566.

QSL's SWL's Samples 05¢ Nicholas & Son Printery, P.O. Box 11184 Phoenix, Arizona.

FOR SALE: DX-100, like new. Has new type loading and Heath improved keying $165. K6JDB, PArkview 1-4820. 1832 Graylock Ave. Monterey Park, Calif.

PARTS CLERK--ELECTRONIC: Phone order board. Must be experienced. Best pay deal in So. Calif., with excellent future possibilities. Empire Elect. Dist. Pasadena, Calif.

LIKE NEW COLLINS: 32V3 transmitter with complete extra set of tubes. Looks and operates like new gear. Only $375. 75A2 receiver with matching speaker. Perfect shape. Only $325. Call Hank, W6KUN, days at RIchmond 9-7471.

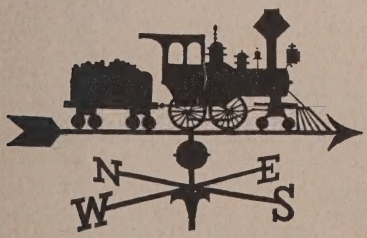
Super Pro 779B with cabinet and power supply $80. 348-0 receiver $55., 348-J receiver $65., R44/ARR5 $7.50. Bamboo poles 24' $1. ea. 250 wt mod. with 805 tubes $20. 4X150D $5. Pole xformer 6000 vct 300 mils $10. Xformer 3650 ct 500 mils $10. 304TL's $10. 826, 829B, T200 ect. Tubes of all kinds ARC 5 3-4 meg $3. KW final with coils $20. PE73 dynamotor $3. 100 watt speech amp and mod. $15. Portable radio batteries 67½, 90, 1½, 6v ect. 1952 Dodge radio $5. Chrome dinette and 4 chairs $30. Teeco Hi Fi 10 watts $30. K6PRU, 674 Millbury Ave., LaPuente, Calif. After 4 pm. ED 8-3896.

WANT A COMPLETE SSB STATION? I have one to sell---B&W 5100-B transmitter with 51SB-V SSB generator. Perfect shape and guaranteed only $450. for both. Receiver is GPR-90 and GSB-1 sideband adaptor also like new $450. for both. Package deal for entire station $850. complete. Call Ken, K6BTK, days at RIchmond 9-7471.

Junior cleaned out the attic this summer to find what he could sell to help his educational finances, Selling: One HQ-145 with proof of recent re-alignment and in cherry shape. One new Gonset Commander in the original carton. Has never been used except as a forgotten article. Finally, a TM-56 Pentron Tape deck with the companion P-4 amp. Has a four inch VU meter and is also in the original carton. Send any offer. I want to stay in school. "Junior" ex-K6ZNW, 643 Cypress Circle, Redlands, Calif.

FOR SALE BY PRIVATE PARTY: Like new KWM-1 AC power supply and speaker $750. Cash. No terms. MAdison 2-2770.

SELL OR TRADE: Have three Globe CB-100 Citizens band 12 VDC/110AC transceivers in factory sealed cartons. Will take Collins gear in trade or sell $115. ea. WANT: 75A1, A2, or A3 or ? WØBNF, Box 105, Kearney, Nebraska.



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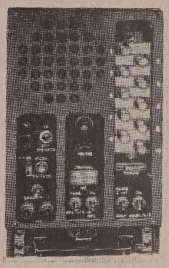
RADIO ELECTRONIC SURPLUS

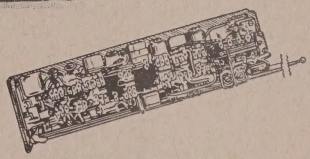
BC-603 MOBILE FM RECEIVER



20-27.9 MC

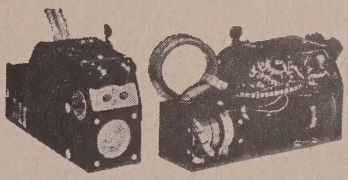
20 to 28 MC Red-Hot receiver that can be easily modified for new Citizen's Band (AM-FM) or 40-50 MC monitoring. See Sept. and Oct. 58 Issues of CQ! Used —Clean units

$9.95



WALKIE-TALKIE CHASSIS

BC-611 Walkie Talkie chassis. See Conversion information in this issue WRA ea $4.95



APG 15 INDICATOR

Easily converted to a Oscilloscope. See Feb. issue WRA. Unit contains a 2AP1 tube with shield; also 9006 tube, miscellaneous potentiometers and resistor. Brand new ..... $5.00 ea.

NO C.O.D's. REMIT FULL AMOUNT WITH ORDER. ALL PRICES F.O.B. PASADENA.

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New Gonset G-50	$150.00
Gonset G-28	$195.00
6 M Communicator III	$189.00
Like new push to talk Ranger	$189.00
RME 4350	$179.00
RME 4350A	$189.00
SX-28 perfect	$129.00
Gonset 500 Linear	$139.00
Viking 6N2	$79.00
2 M Communicators from	$149.00
S-38 Receiver	$29.00
S-38E Receiver	$39.00

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6051 Vineland Ave. No. Hollywood, POpular 2-7146

Jim Wood K6BXW

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- ★ 3 mc crystal lattice-type IF filter
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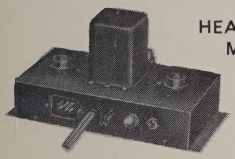

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- ★ Operates from 12-14 volt battery
- ★ Contains relay for push-to-talk operation
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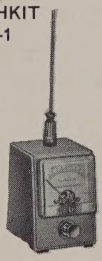
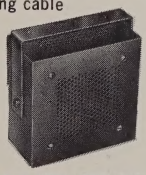


POWER METER KIT



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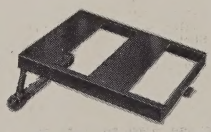

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Kierulff Sound Corp.
820 West Olympic Blvd.

Kierulff Sound Corp.
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Model No. 25
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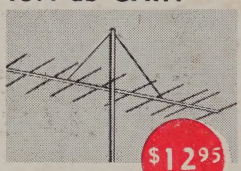
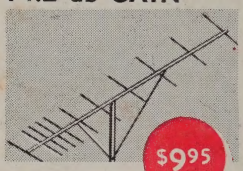


$12.95

Model No. 210
2M, 10 Element

14.2 db GAIN



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1¼M, 11 Element

16.1 db GAIN

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Model No. 313
¾M, 13 Element

These Hy-Gain VHF Antennas are OPTIMUM SPACED for maximum forward gain. Parasitic elements are constructed from solid 6061T6 alloy aluminum rod for High Q, resulting in tremendous efficiency. The booms are large diameter heavy wall aluminum tubing. All hardware is hot dipped galvanized iridite treated for maximum weather ability. Guaranteed for 1 full year.

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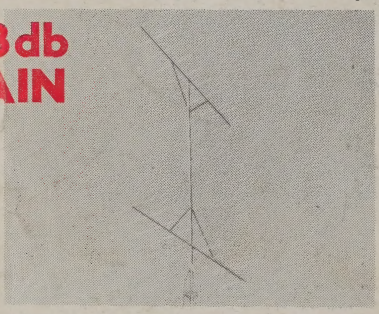

Stacking two of any of the above hy-gain VHF beams results in an additional 3 db gain with considerable reduction in vertical beam width, concentrating maximum power at low vertical angles which are so important in VHF propagation. Stacking kits include all phasing lines, matching transformers, all necessary hardware (less mast), and complete assembly instructions.

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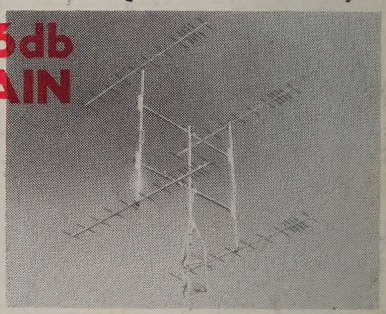
210S	(for 2-2M, 10 Element Beams)	
111S	(for 2-1¼M, 11 Element Beams)	
313S	(for 2-¾M, 13 Element Beams)	

All kits complete with detailed instruction manuals. For use with most types of transmission lines. Completely factory pre-tuned.

+ 6db GAIN



Stacking four of any of the above hy-gain VHF beams results in an additional 6db forward gain, together with the all important reduction in both vertical and horizontal beam width. The quad stack arrangement results in the maximum concentration of radio frequency energies within the mechanical limitations of most Amateur installations. Stacking kits include all phasing lines, matching transformers, all necessary hardware (less mast), and complete assembly instructions. Stacking frame assemblies (SF) include all necessary heavy duty steel and aluminum tubing specially designed positive grip brackets and hardware (less main mast).

Complete Stacking Kit for any four Hy-Gain VHF Yagi's

Order by Model No.

25QS	(for 4-2M, 5 Element Beams)	$15.95 Net.
210QS	(for stacking 4-2M, 10 Element Beams)	
111QS	(for 4-1¼M, 11 Element Beams)	
313QS	(for stacking 4-¾M, 13 Element Beams)	

Stacking Frames for use with any of the above.
Quad Stacking Kits, $59.50

Order by Model No.

25SF	(stacking frame for the 4-2M, 5 Element Beams)
210SF	(stacking frame for the 4-2M, 10 Element Beams)
111SF	(stacking frame for the 4-1¼M, 11 Element Beams)
313SF	(stacking frame for the 4-¾M, 13 Element Beams)

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